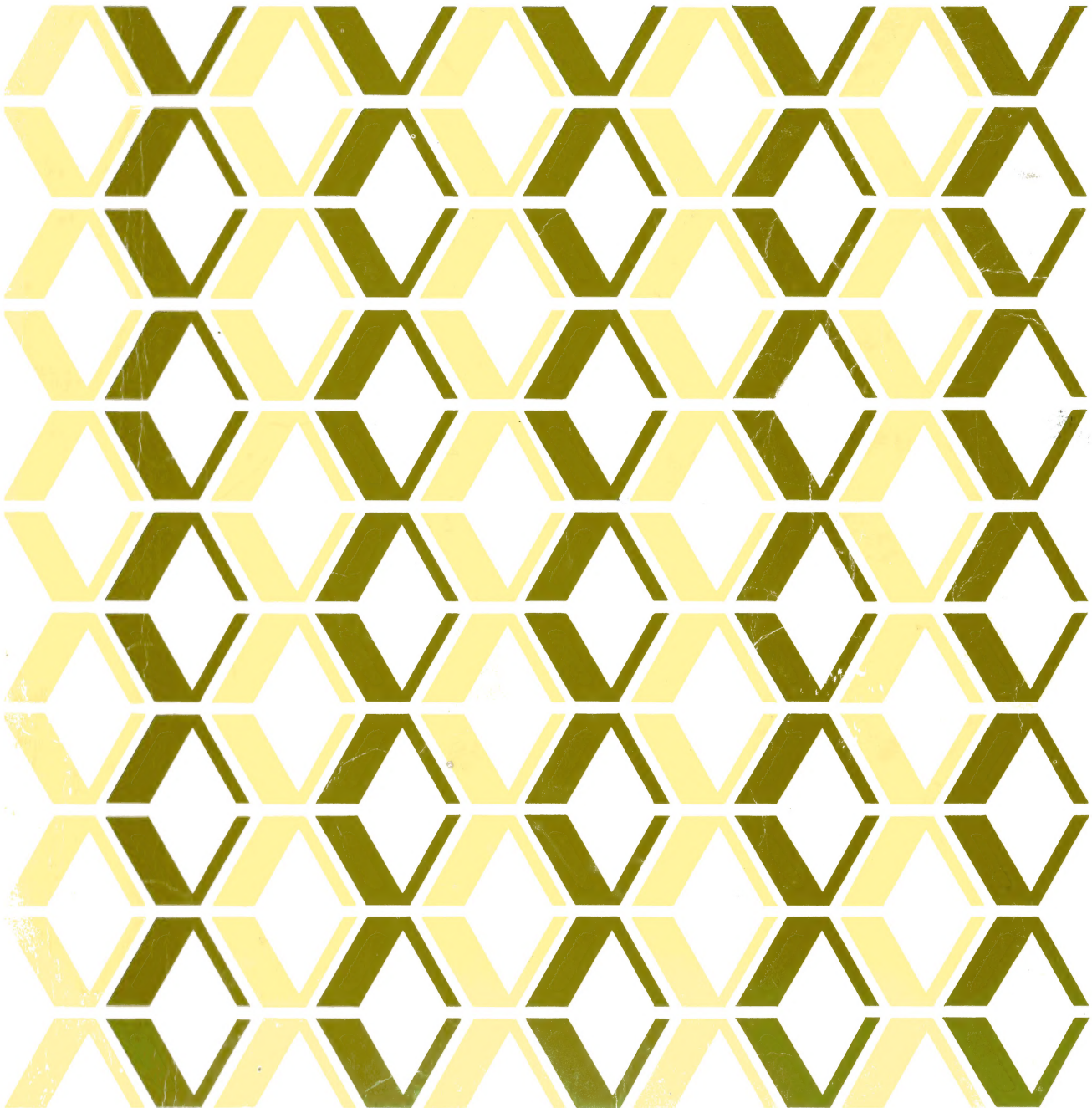


HOW TO USE YOUR

Empisal

**RIBBING ATTACHMENT
KR-680**



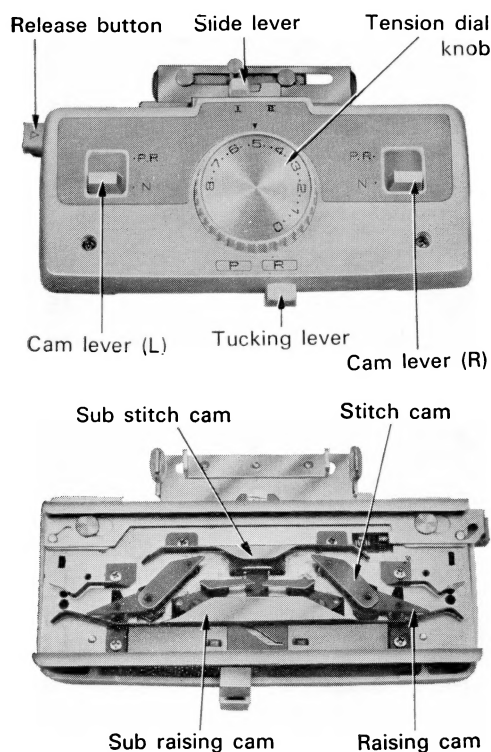
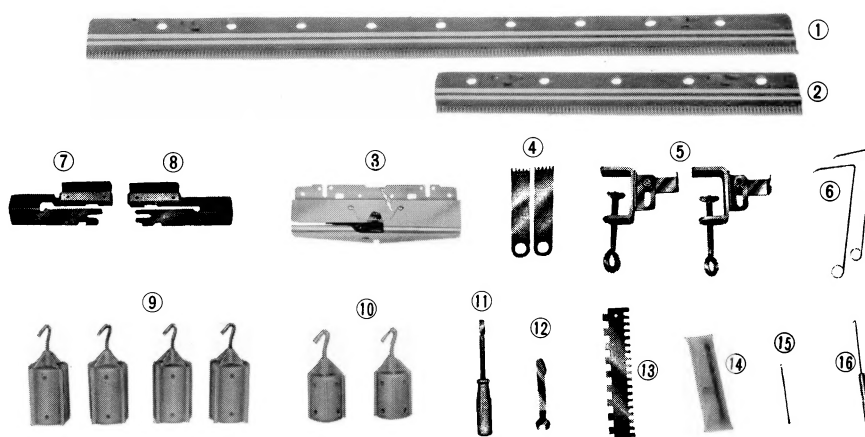
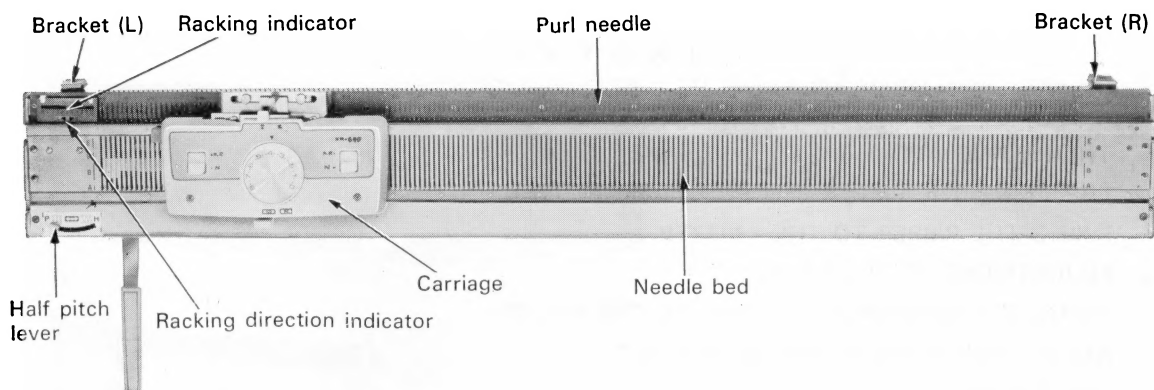
AMENDMENTS

The following Tension Chart replaces that on Page 9 and the tensions recommended have been tested for the average Australian wools.

The Slide Lever has two positions- I and II . If a firm automatic cast-on edge is required on plays up to 5 ply, use lever on position II ; position I for thicker plys. Elasticity and firmness of basque is also determined by lever position- position II for a firm result and position I for a softer one.

<u>YARN</u>	<u>RIB</u>	<u>SELVEDGE TENSION</u>	<u>BASQUE TENSION</u>
3 ply	1 × 1	0 (zero)	1
	2 × 2	0.2 (zero plus 2 clicks)	2
4 ply	1 × 1	0.1 (zero plus 1 click)	2
	2 × 2	0.2 (zero plus 2 clicks)	3
5 ply	1 × 1	1	4
	2 × 2	1.2 (one plus 2 clicks)	5
8 ply	1 × 1	3	9 MB 8 RB.

NOTE: When knitting a whole garment in rib it is advisable to loosen tension after completing basque. A garment in 2 × 2 rib should be knitted on stocking stitch tension for the ply used.



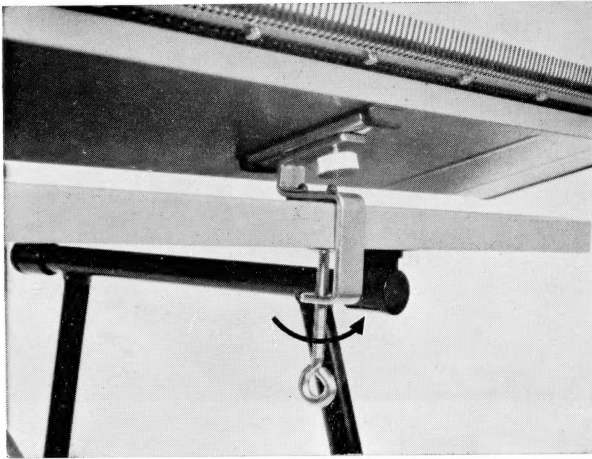
STANDARD ACCESSORIES

1. Cast-on comb, large & Wire	1 set
2. Cast-on comb, small & Wire	1 set
3. Connecting arm assembly	1 pce.
4. Claw type weight hanger -	2 pcs.
5. Reinforcing table clamp	2 pcs.
6. Wire-loop type weight hanger	2 pcs.
7. Needle presser brush, left	1 pce.
8. Needle presser brush, right	1 pce.
9. Large weight -	4 pcs.
10. Small weight	2 pcs.
11. Screw driver	1 pce.
12. Spanner	1 pce.
13. 1/2 x 3/2 needle pusher	1 pce.
14. Spare needle	3 pcs.
15. Double eyelet transfer needle	1 pce.
16. Work hook	1 pce.

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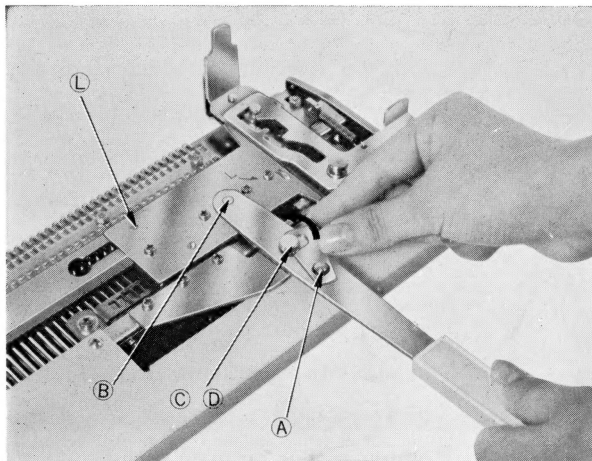
PREPARING THE KNITTING MACHINE TO FIT THE RIBBING ATTACHMENT



- 1) Secure the knitter onto a flat table, using the Table clamps provided as an accessory for the knitter.

1

PREPARING THE RIBBER BEFORE FITTING ONTO KNITTER

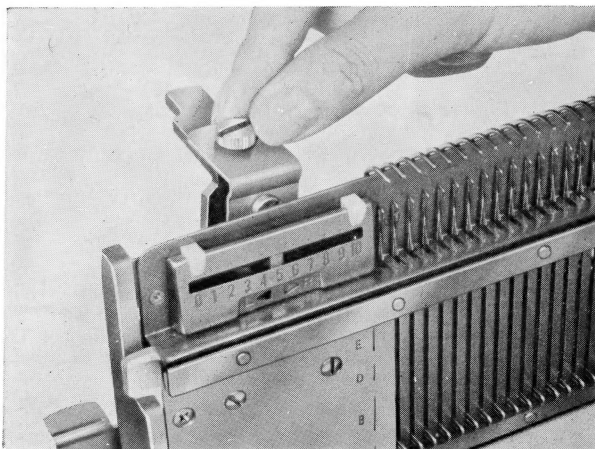


- 1) Set the racking lever on the back side of the ribber.

Open the lever lock (A), fit the pin (B) of the lever into the groove of the guide plate (L) and fit the hole (C) on the stud (D) of the guide plate and lock racking lever.

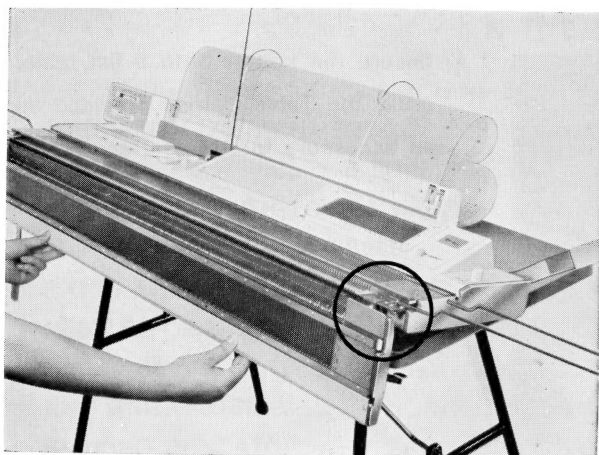
2

FIXING THE RIBBER TO THE KNITTER



- 1) Remove the thumb screws from the brackets on both sides of the ribber.

3

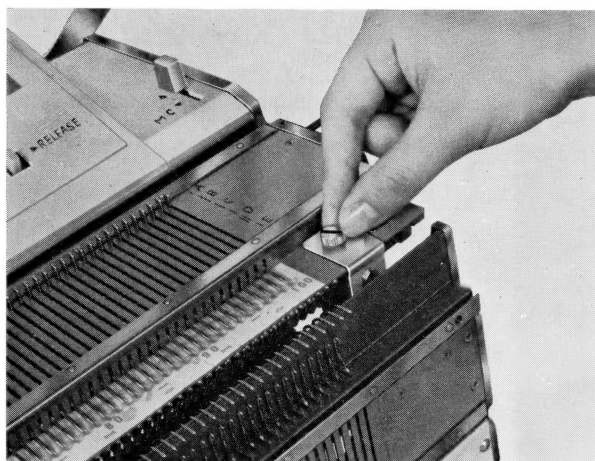


4

- 2) Holding the ribber with both hands so that the gates of the ribber are up and the purl needle butts are toward you.

Insert the lips of the brackets beneath the knitter bed as far as they will go.

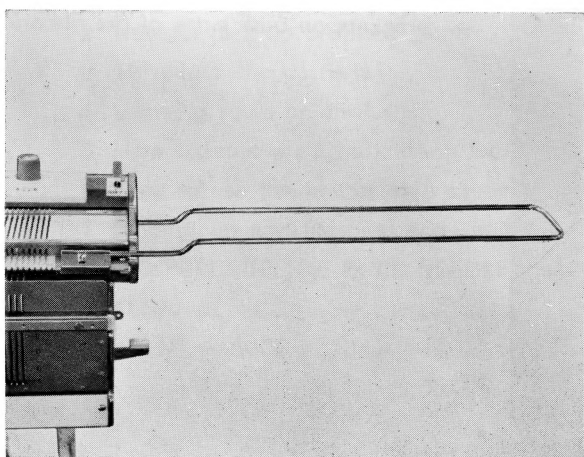
TO ALIGN RIBBER WITH MAIN BED



5

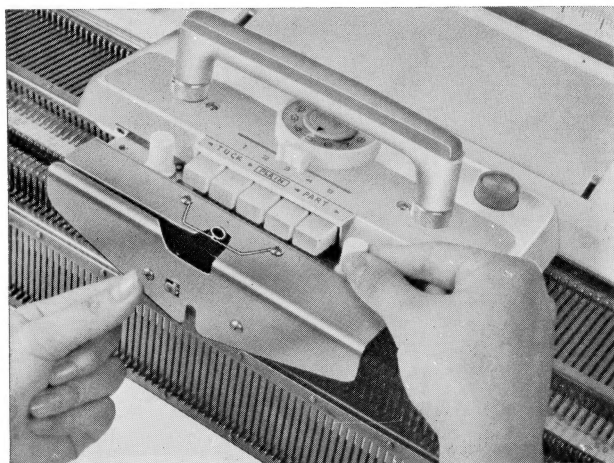
- 3) Attach Ribber to the Knitter by slotting the brackets at each end and fasten both thumb screws only slightly. Make sure that the Half pitch lever on the left end of the Ribber bed is set in "P" position. Bring up about 30 needles on the main bed. Using 1 × 1 needle pusher, push back every 2nd needle into A position. Bring up needles on Ribber to correspond with the empty spaces on main bed.

Then check if needles on both beds are in alignment by bringing forward needles from A position to touch corresponding rib needles dead centre. Should this not be the case, move ribber slightly either left or right until needles ARE centred, then tighten bracket screws.



- 4) You can attach the Extension rail included accessories of knitter for L carriage if you require.

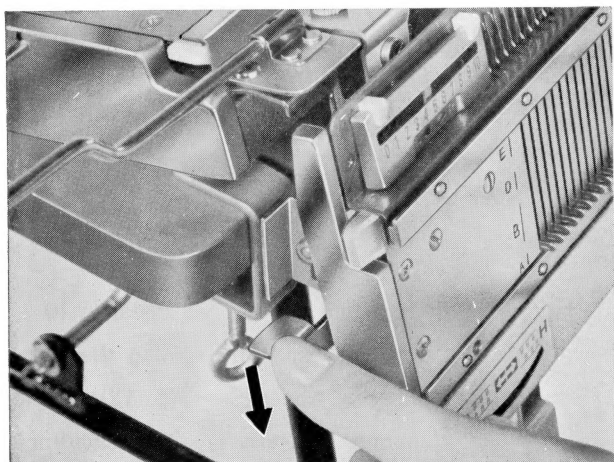
6



- 5) Fit the connecting arm on the knitter's carriage.

Loosen the thumb screws, set the connecting arm assembly onto the knitter's carriage instead of using the sinker plate assembly.

7

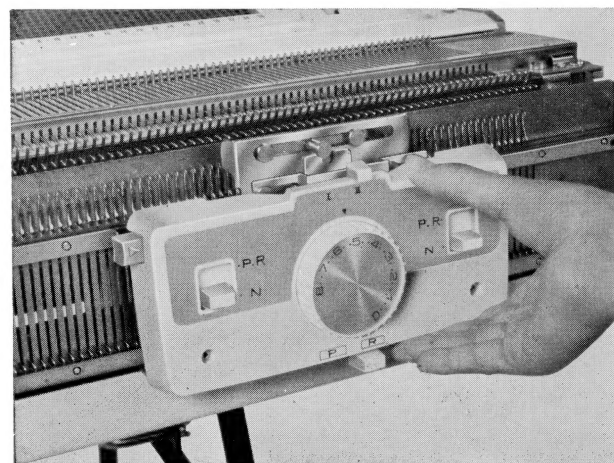


- 6) With both thumbs, push down the levers of the brackets.

The ribber will come down one step. This position is used for picking up dropped stitches.

Push down the levers again and the ribber will come down one more step. At this position the ribber is at rest and single bed knitting work can be done without removing the ribber.

8



- 7) When you return to working position.

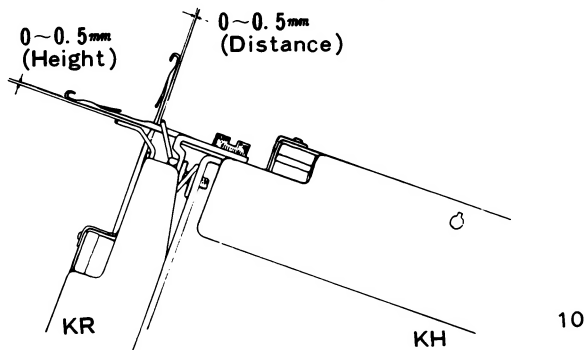
Lift up the ribber with your hands as high as it will go until it stays in position without holding.

- 8) Take the ribber carriage out of the Accessories box and put it on the needle bed of the ribber.

Check whether the KR carriage moves on the needle bed smoothly.

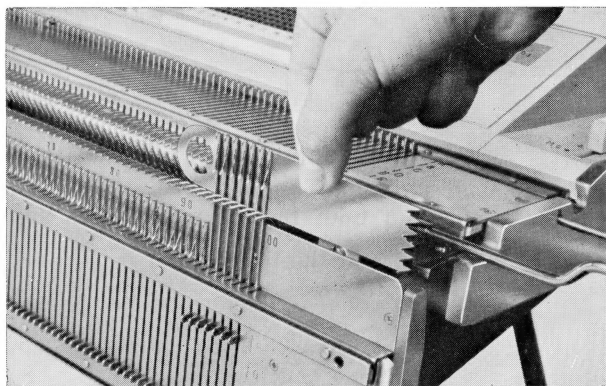
9

ADJUSTMENT OF THE RIBBER



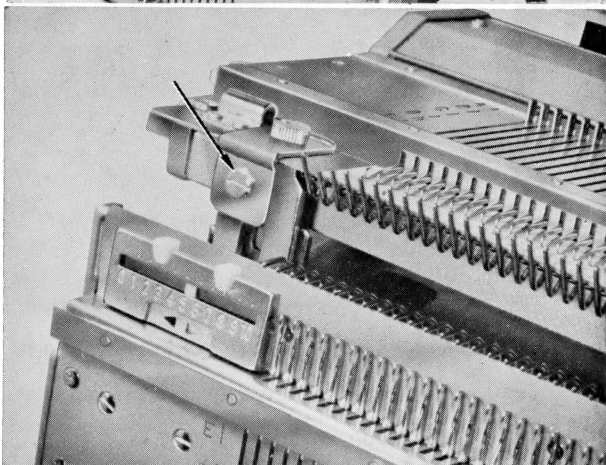
* The correct distance between the knitter and the ribber is shown in the Fig.10.

If the distance is not right, please adjust it as per following method.

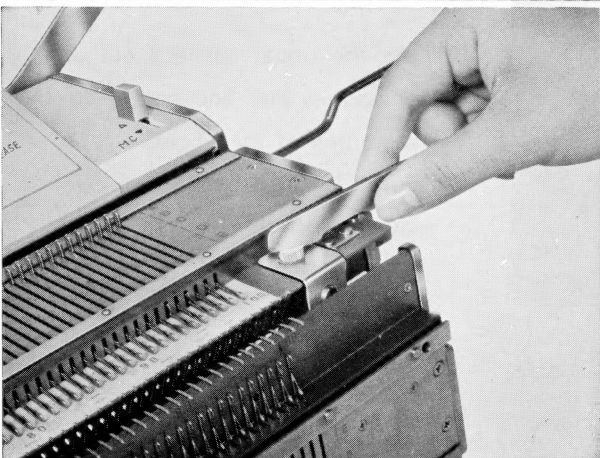


A. How to adjust the distance.

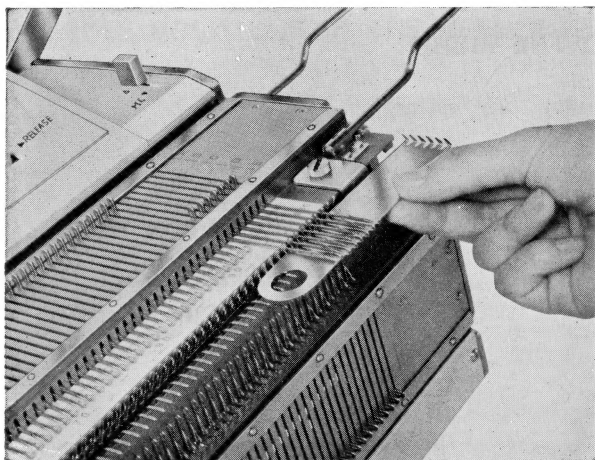
- 1) Raise up a few needles on both ends of the ribber to E position and put the claw type weight hanger between the gate pegs of the KH and the back of the needles of the KR.



- 2) To obtain the proper distance (0 ~ 0.5mm), adjust by turning the bolts of both sides (See Fig. 12) by the spanner. There are no clearance between the gate pegs, weight hanger and back of the needles.



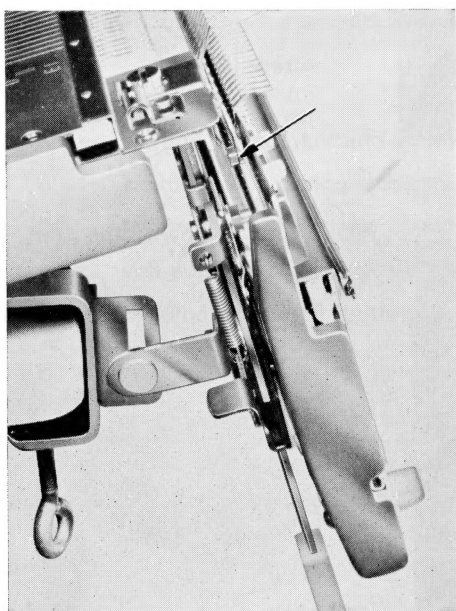
- 3) After adjusting, go back the needles to A position and fasten both thumb screws by spanner tightly.



B. How to adjust the height.

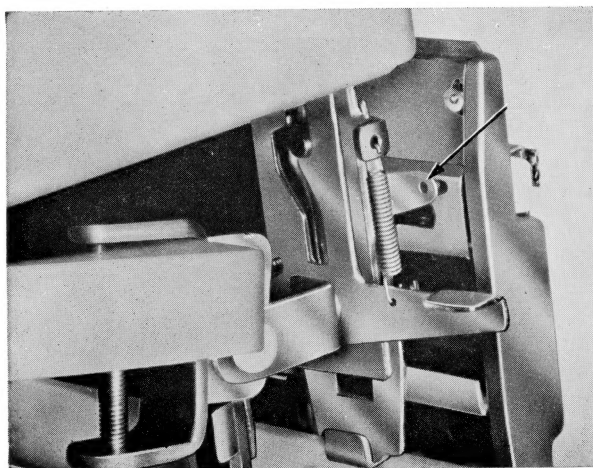
- 1) Raise a few needles on both ends of the knitter to E position and put the claw type weight hanger between the gate pegs of the KR and the back of the needles of the KH.

14



- 2) By pushing down the levers on both brackets, let down the ribber one step. At the back of the ribber, you will find out the nuts and loosen these nuts by the spanner.

15



- 3) Return the ribber to normal position and adjust the height by moving both height adjusters (See Fig. 16). The proper distance is 0 ~ 0.5mm width.

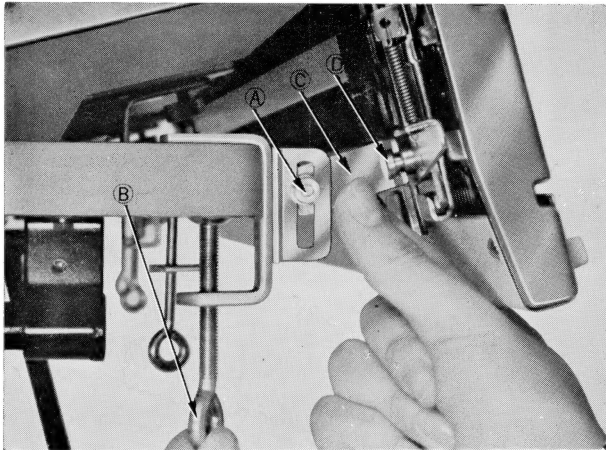
- 4) Let down the ribber one step again and fasten the nuts by the spanner.

16

FIXING THE REINFORCING CLAMP TO THE RIBBER

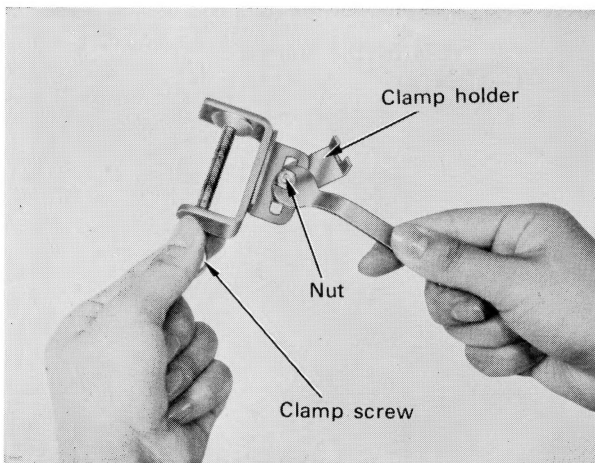
To prevent shimmying of the ribber in operation, use reinforcing clamps.

The reinforcing clamps are used for secure both ends of the ribber onto the table.



- 1) Take out the clamp from the box.
- 2) Unscrew the clamp screw.
- 3) Loosen the nut (A) of the clamp with spanner.
- 4) As shown in figure, slide the fork of the clamp holder (C) into the groove of the stud (D) on the back of the bracket and secure the clamp screw (B).

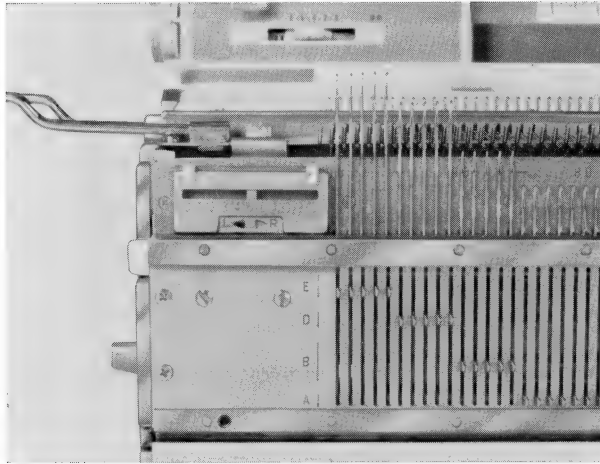
17



- 5) Tighten down the nut (A) with spanner.

18

NEEDLE POSITIONS IN THE NEEDLE BED



19

There are 4 needle positions.

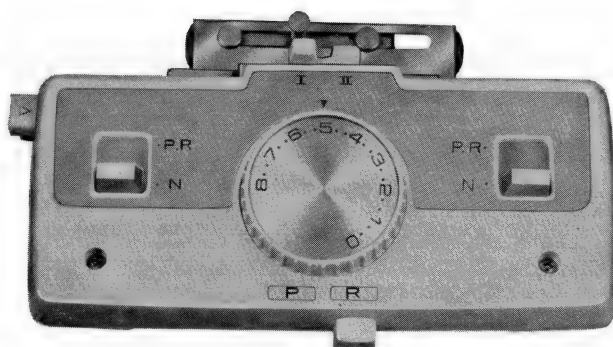
POSITION "A" — Resting or non-knitting position. (against the base of the needle-grooves).

POSITION "B" — Knitting or working position.

POSITION "D" — When the needles are brought in this position from the Position "E", they will automatically back to the Position "B" by operation of the carriage.

POSITION "E" — Holding or partial knitting position.

THE CARRIAGE



20

CAM-LEVERS: There are two cam levers on either side of the tension control knob. Each of these levers has two positions.

POSITION "N": — is used for normal ribbing and double bed knitting.

POSITION "PR": — is used for Fisherman's rib and other special ribbing effects when the tucking lever is on the Position "P".

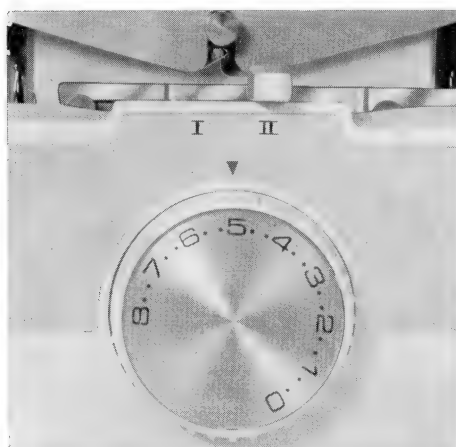
TUCKING-LEVER: Tucking-Lever is underneath of the tension control knob, this lever has two positions; shown on the carriage as P and R.

POSITION "P" — is used for Fisherman's rib and other special ribbing effects.

POSITION "R" — is used for Normal rib.

RELEASE BUTTON: The Release button is used for releasing the Carriage (R) when it has jammed.

KNITTING GAUGE



21

WHEN KNITTING BY MACHINE, IT IS ONE OF THE MOST IMPORTANT OPERATION TO CHOOSE THE SUITABLE TENSION FOR GOOD RESULTS.

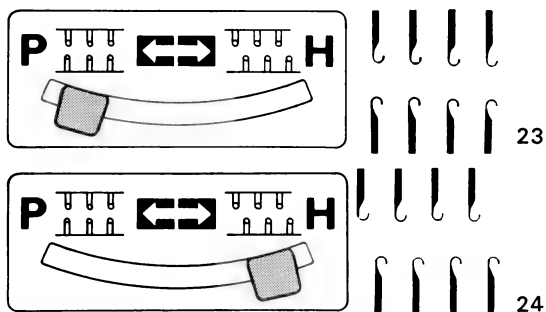
The tension in knitting denotes the size of the stitch. The tension dial on the ribber is graduated from "0" to "8", each space between numbers being subdivided into three parts. The figure "0" denotes the tightest tension, i.e. the smallest stitch and the "8" denotes the loosest or largest stitch. The tension at which a garment is knitted depends not only on personal taste, but also on the type of garment required and the thickness of the wool.

"The following tension chart is a guide for your reference. The Slide Lever has two position- I and II. If a firm automatic cast-on edge is required on plys up to 5 ply, use Lever position II; position I for thicker plys. Elasticity and firmness of fabric is also determined by Lever position- position I for a softer result and position II for a firm one."

YARN	RIB	SELVEDGE	FABRIC
3 ply	1 x 1	0 - 1	2 - 3
	2 x 2	0 - 1	2 - 3
	Full needle	1 - 2	3 - 4
4 ply	1 x 1	0 - 1	2 - 3
	2 x 2	0 - 1	3 - 4
	Full needle	2 - 3	4 - 5
5 ply	1 x 1	2 - 3	4 - 5
	2 x 2	2 - 3	5 - 6
	Full needle	*****	*****

22

RACKING INDICATOR



1) HALF PITCH LEVER

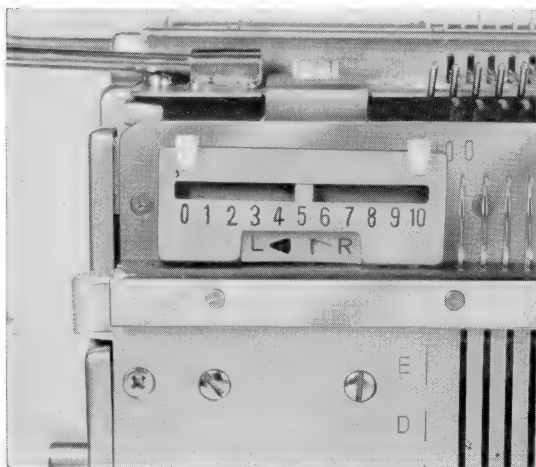
Half pitch lever is on the left side below the needle bed.

2 positions of the half pitch lever are shown on the indicating plate of the needle bed cover as P and H.



Position P: Plain needles and purl needles directly opposite to each other.

Position H: Purl needles are halfway between two plain needles.



2) RACKING LEVER

25

Racking lever is used for racking pattern and zigzag pattern.

Lever in vertical position is center position. By moving lever to left or right from vertical position, ribber moves 5 pitches to left or right.

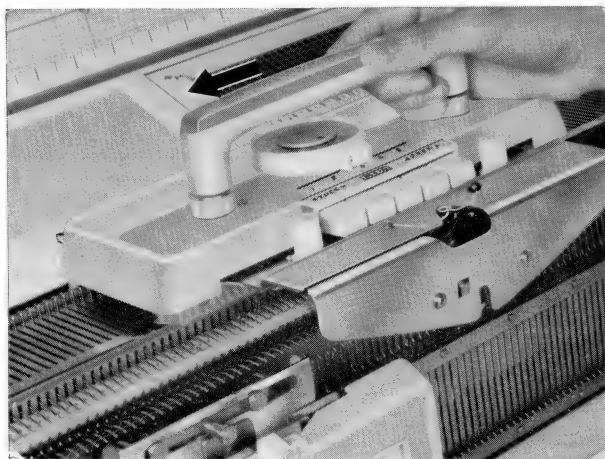
Normally, set the indicator to No.5 which shows center position.

The two moving indicators on the indicating plate for racking are used as an index of the racking range.

Arrow head indicates the direction of racking.

26

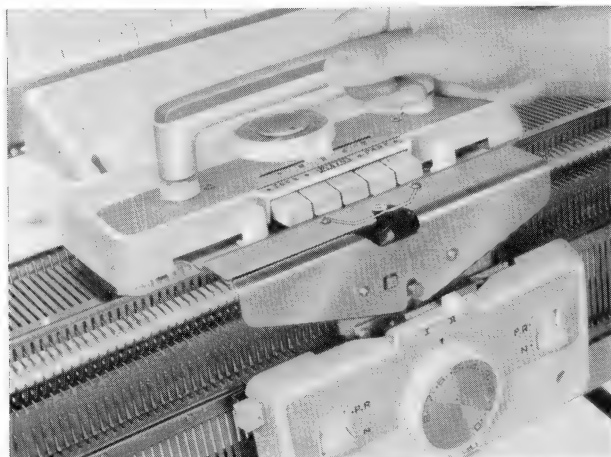
HOW TO JOIN THE CARRIAGES



27

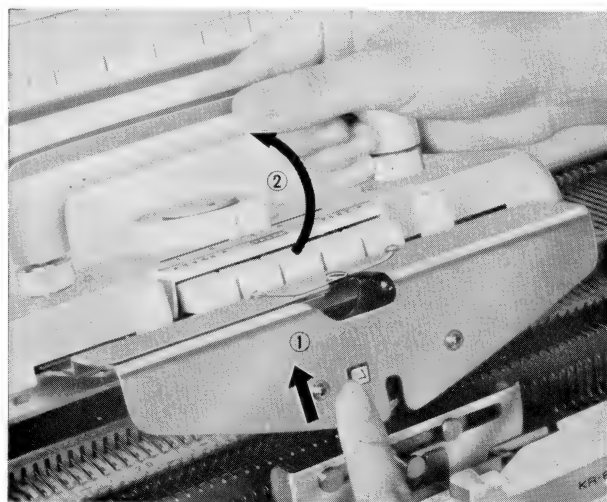
1) TO CONNECT THE CARRIAGE

Move the KH carriage slowly to the KR carriage, (See Fig. 27) until the connecting hook catches the pin of KR carriage.



28

Then it will connect to the carriage of the ribber with the connecting arm.



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2) TO REMOVE THE CARRIAGE

By pressing the connecting hook release button, you can remove the carriage of ribber from the carriage of knitter.

HOW TO USE ACCESSORIES

1) CAST-ON COMB (LARGE AND SMALL)

Cast-on comb is used for casting-on the first row of stitches which is the selvedge of the knitting.

2) WEIGHTS

Number of weights to be used depends on the width of knitting and pattern.

Hang the weights on the cast-on comb so that they hold the knitting work in balance.

Standard weights chart for knitting stitch width.

No. of stitches	large weight	small weight
—50	1	—
50—100	2	—
100—150	3	2
150—200	4	2

30

3) WIRE-LOOP TYPE WEIGHT HANGERS

The wire loop type weight hangers are used for hanging small weights to give tension to the edges of the knitting work and also used as a small cast-on comb for casting on work of less than 20 stitches.

4) HOOK

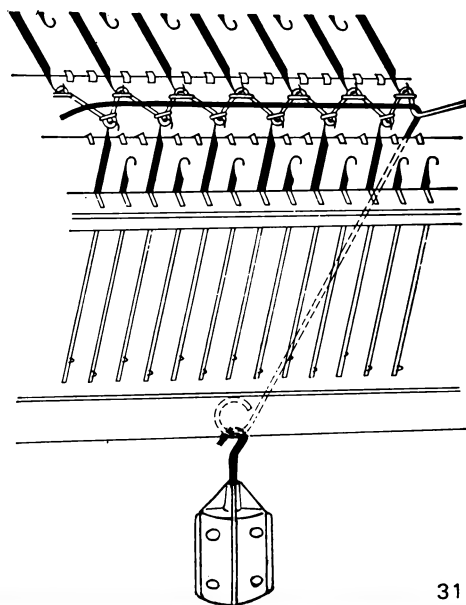
The hook is used to pick up dropped stitches.

5) CLAW-TYPE WEIGHT HANGERS

The claw-type weight hangers are used to hang the small weights to give tension to the edge of the knitting work.

6) NEEDLE PRESSER BRUSH

When the "TUCK" buttons are depressed for the pattern, put the Needle presser brush right and left onto the carriage by thumb screws.

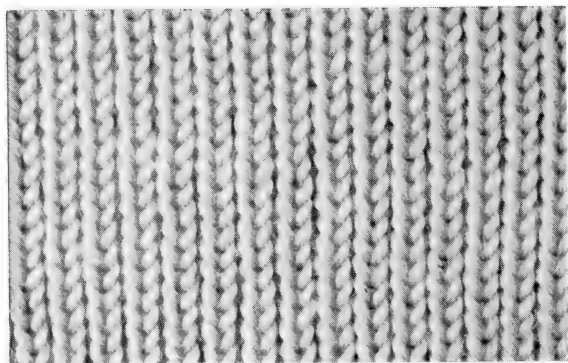


31



32

HOW TO KNIT 1 x 1 RIB



33

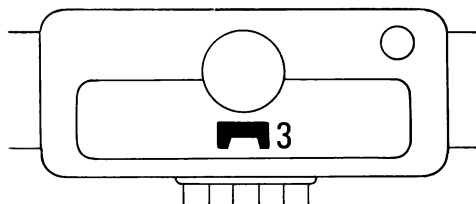
1 x 1 RIB is most widely used for waist bands in sweaters, cuffs, collars, pockets and for many other decorative purposes. The rib is produced by having knit stitch over knit stitch and purl stitch over purl stitch, in vertical lines, and is soft and elastic.

I Casting on for 1 x 1 rib

(1) Setting of carriage

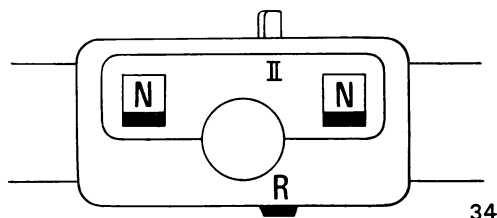
Carriage (K)

Pattern selector button: Plain knitting
Holding cam lever: 3
Tension dial: On suggested tension



Carriage (R)

Cam lever: (L) N, (R) N
Tucking lever: R
Tension dial: On suggested tension

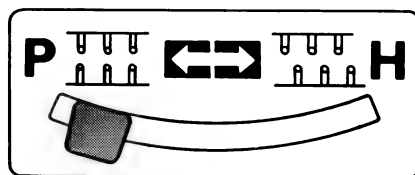


34

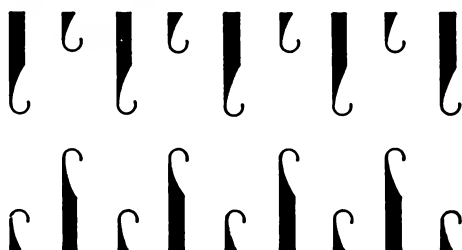
(2) Needle arrangement

- Set the half pitch lever on "P".
- By using 1/1 needle pusher, arrange the plain needles and purl needles in position "B" alternately.

Note: Both end needles must be plain needles.



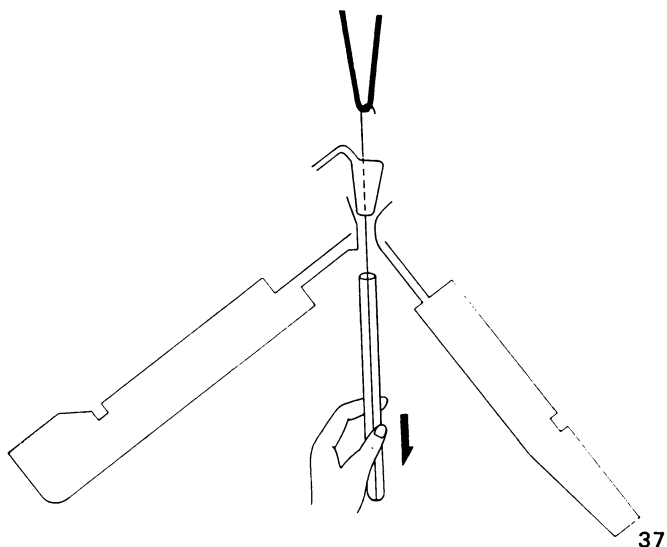
35



36

(3) Setting of needles in normal position

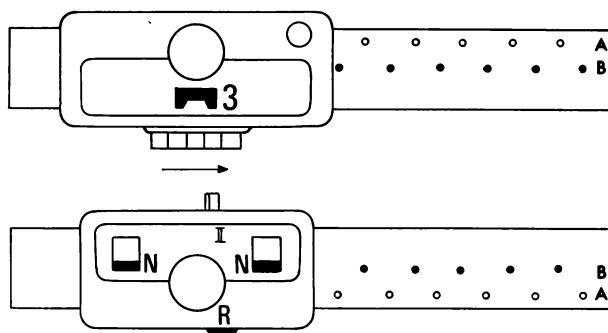
- a. By operating the connected carriage a few times over all arranged needles, the needles on K and R needle beds are set in normal position.
- b. Leave the connected carriage at left side of the needle beds.
- c. The plain needles and purl needles will be set on position "B".



37

(4) First row knitting

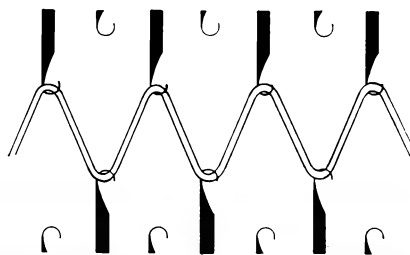
- a. Put the hook into the yarn feeder between the knitter and the ribber from underneath, hook the yarn from underneath, hook the yarn and pull it down.
- b. Operate the connected carriage from left to right (The yarn will hang on plain and purl needles.)



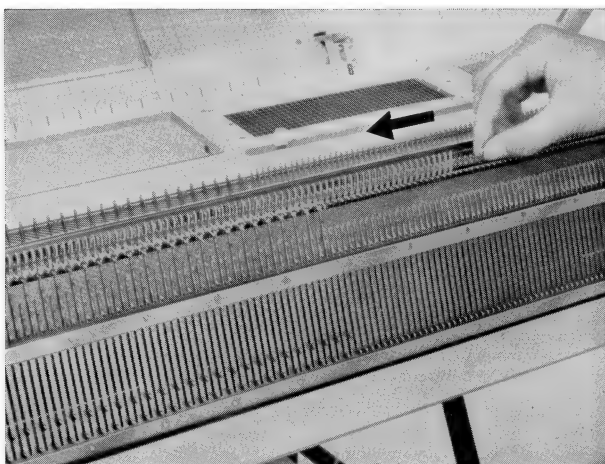
38

(5) Hang on the cast-on comb

- a. Pull out the wire from the cast-on comb. (Select large or small cast-on comb depending on the knitting width) Hang on the cast-on comb with the face having the protrusions facing you and the comb on top.
- b. Put in the cast-on comb between the knitter and the ribber from underneath and insert the comb between the plain and purl needles in such a way that the top of the comb does not disturb or drop the yarn hanging between the needles. Pass the wire through the top of the combs with your right hand. While holding the comb with your left hand.

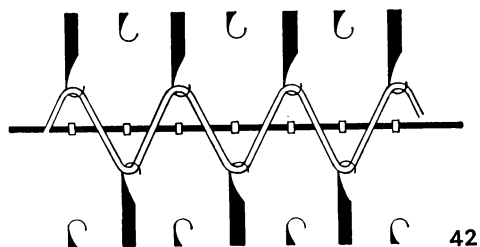


39



40

- c. Turn the loose end of the yarn around the cast-on comb knob to keep it out of the way and to tense the first stitch.

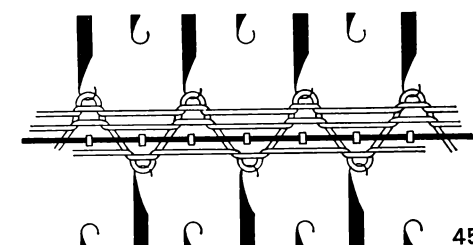
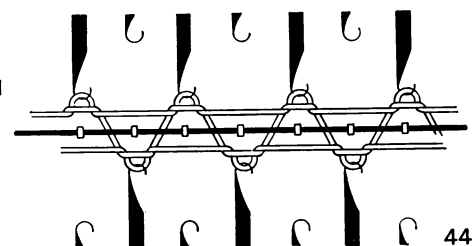
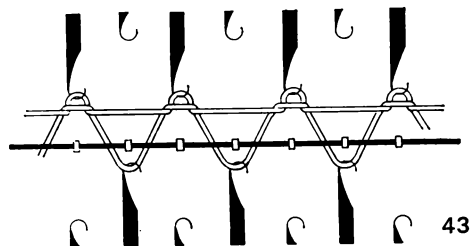
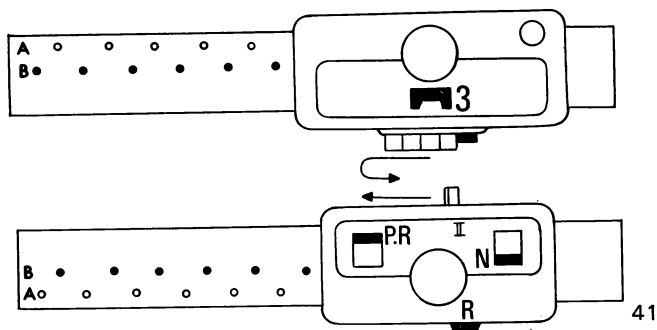


(6) Hang on weights

Hang weights as per standard weight chart (page 12) on the cast-on comb to keep balance.

(7) Perfect selvage

Set the carriages as shown in the figure.

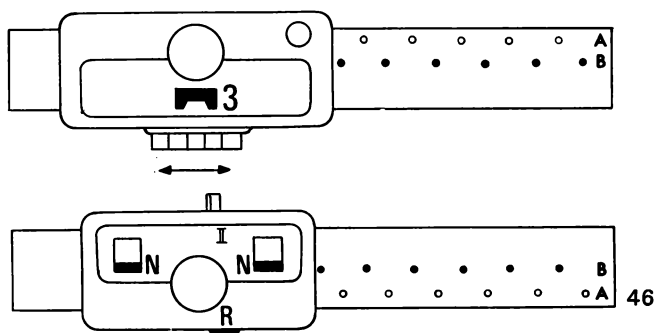


- Move the connected carriage from right to left.
(Only the plain needles knit the stitch.)
- Move the connected carriage from left to right.
(The purl needles knit the stitch.)
- Move the connected carriage from right to left.
(Only the plain needles knit the stitch.)

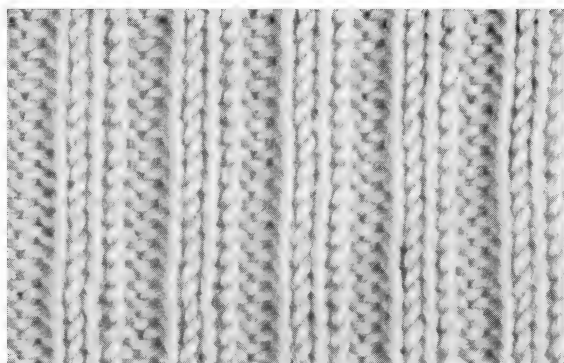
II 1 x 1 Rib knitting

- * Set the connected carriage as shown in the figure and move it back and forth.

Then, you can make easily 1 x 1 Rib.



HOW TO KNIT 2 x 2 RIB



47

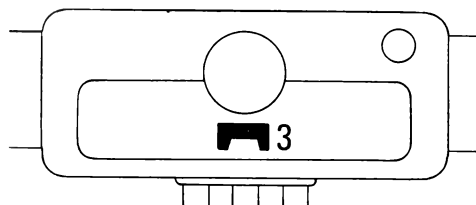
2 x 2 Rib is 2 knit and 2 purl rib. In one row, 2 knit stitches alternate with 2 purl stitches and vertically form knit stitch over knit stitch and purl stitch over purl stitch.

I Casting on for 2 x 2 rib

(1) Setting of carriage

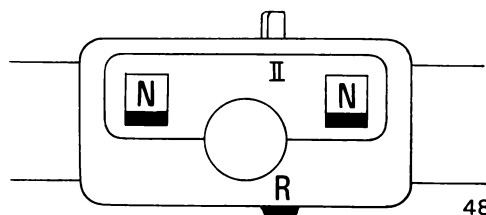
Carriage (K)

Pattern selector button: Plain knitting
Holding cam lever: 3
Tension dial: On suggested tension



Carriage (R)

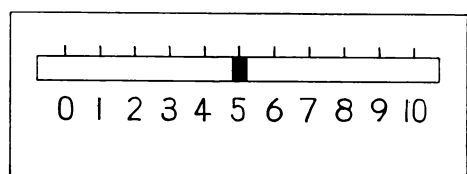
Cam lever: (L) N, (R) N
Tucking lever: R
Tension dial: On suggested tension



48

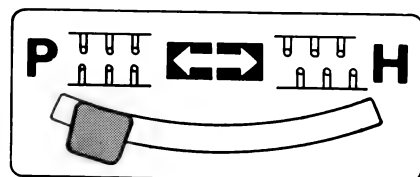
(2) Needle arrangement

a. Set the racking indicator on No. 5.



49

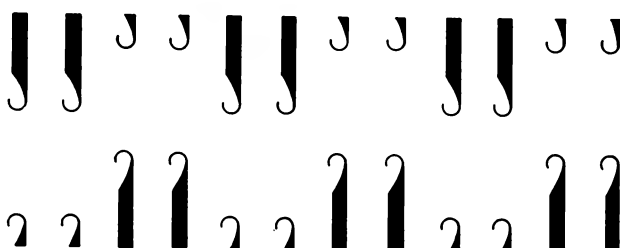
b. Set the half pitch lever on "P".



50

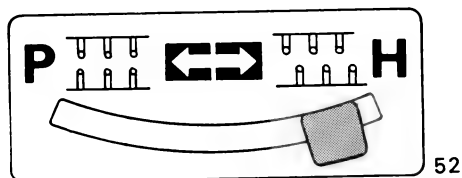
c. Arrange every other 2 plain needles in position "B" and every other 2 purl needles in position "B" as shown in right figure, manually.

Note: Both end needles must be plain needles.

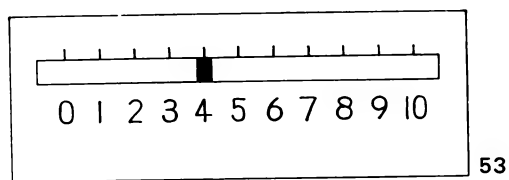


51

- d. Set the half pitch lever on position "H".
- e. Set the racking indicator on No. 4.



52



53



54

- f. Raise a purl needle in the left side to position "B".

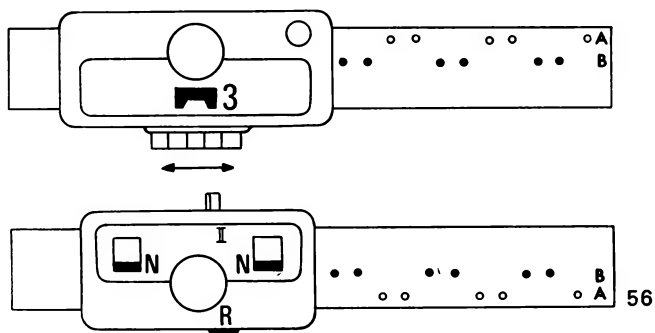


55

↑
Raise

(3) Setting of needles in normal position

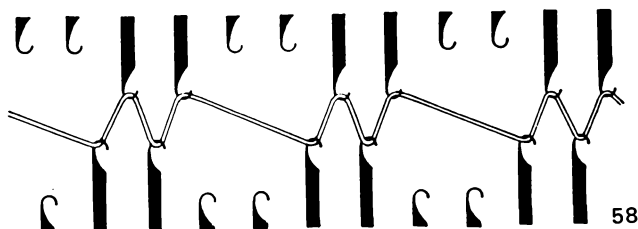
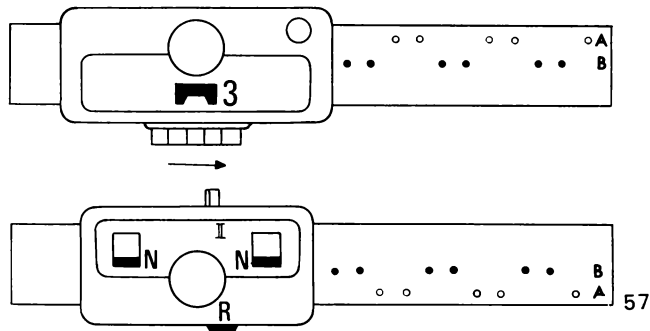
- a. By operating the connected carriage a few times over all arranged needles, the needles on K and R needle beds are set in normal position.
- b. Leave the connected carriage at left side of the needle beds.
- c. The plain needles and purl needles will be set on position "B".



56

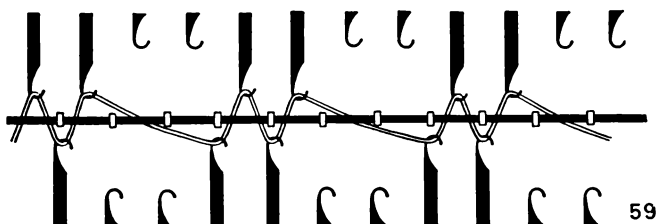
(4) First row knitting

- a. Put the hook into the yarn feeder between the knitter and the ribber from underneath, hook the yarn and pull it down.
- b. Move the connected carriage from left to right. (The yarn will hang on plain and purl needles.)



(5) Hang on the cast-on comb

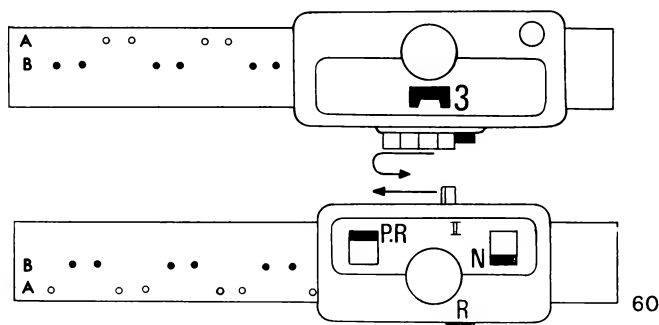
- a. Pull out the wire from the cast-on comb. (Select large or small cast-on comb depending on the knitting width).
Hang on the cast-on comb with the face having the protrusions facing you and the comb on top.
- b. Put in the cast-on comb without wire, between the knitter and the ribber from underneath and insert the comb between the plain and purl needles in such a way that the top of the comb does not disturb or drop the yarn of zigzag which is hanging between the needles. Pass the wire through the top of the combs with your right hand.
- c. Turn the loose end of the yarn around the cast-on comb knob to keep it out of the way and to tense the first stitch.



(6) Hang on weights

Hang weights as per standard weight chart (page 12) on the cast-on comb to keep balance.

(7) Perfect selvedge

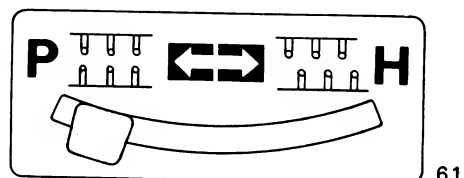


Set the carriages as shown in the figure.

- Move the connected carriage from right to left. (Only the plain needles knit the stitch.)
- Move the connected carriage from left to right. (The purl needles knit the stitch.)
- Move the connected carriage from right to left. (Only the plain needles knit the stitch.)

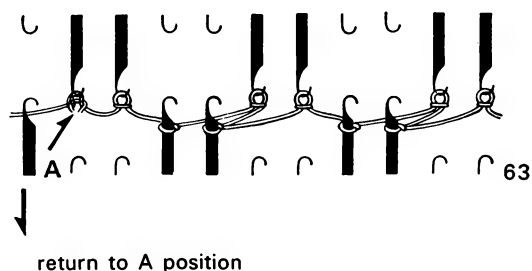
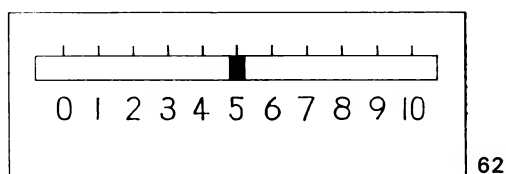
(8) Needle arrangement to change from selvedge of the 2 x 2 rib knitting.

- Set the half pitch lever to position "P".

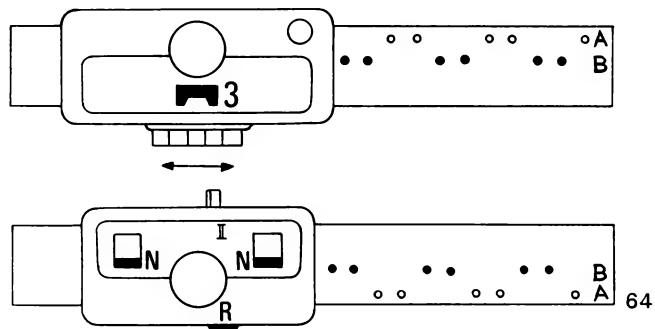


- Set the racking indicator on No. 5.

- Transfer the stitch of left end purl needle to the left end plain needle which has one stitch, and return the empty purl needle to position "A".

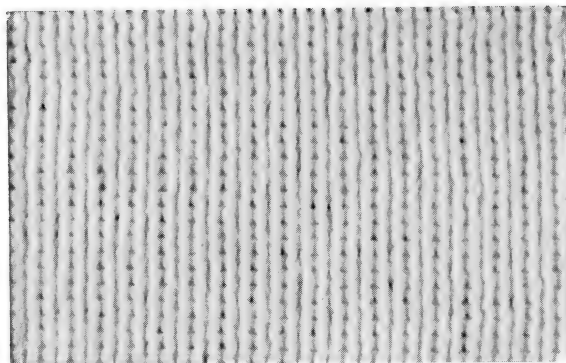


II 2 x 2 Rib knitting



- Set the connected carriage as shown in the figure, and move it back and forth. Then, you can make easily 2 x 2 Rib.

HOW TO KNIT FULL NEEDLE RIB



65

I Casting on for full needle rib

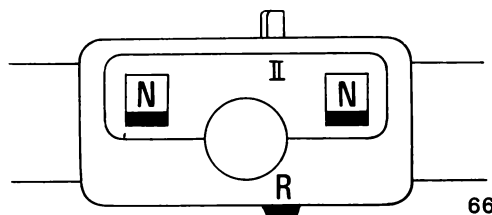
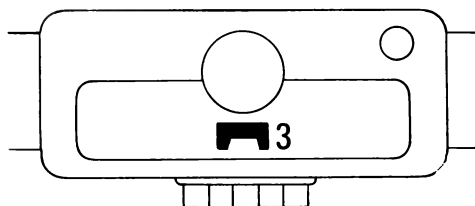
(1) Setting of carriage

Carriage (K)

Pattern selector button: Plain Knitting
Holding cam lever: 3
Tension dial: On suggested tension

Carriage (R)

Cam lever: (L) N, (R) N
Tucking lever: R
Tension dial: On suggested tension

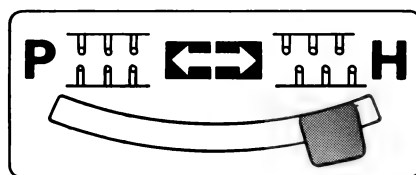


66

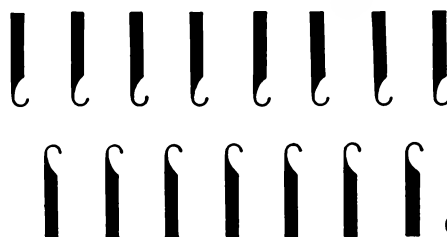
(2) Needle arrangement

- Set the half pitch lever on "H".
- By using the back side of 1/1 needle pusher, arrange all plain needles and all purl needles in position "B".

Note: Both end needles must be plain needles.



67



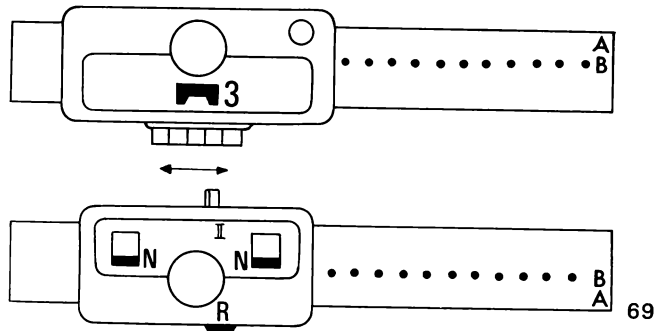
68

Knitting system of full needle rib is the same as for 1 x 1 rib. Difference is the needle arrangement only. In 1 x 1 rib, every other needles are used but in full needles rib, all needles are used.

The rib is used for thin yarn (ex. 2 ply)

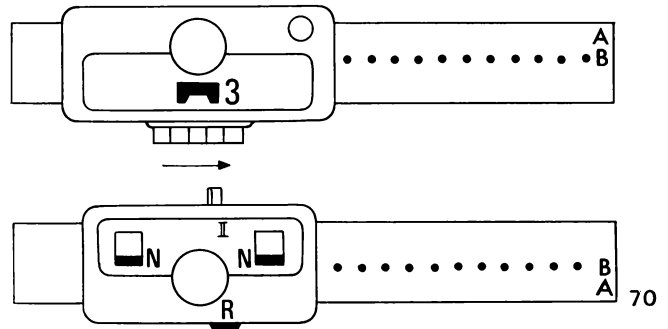
(3) Setting of needles in normal position.

- By operating the connected carriage a few times across the needles of both beds, the needles of K and R needle beds are set in normal position.
- Leave the connected carriage at left side of the needle beds.
- The plain needles and purl needles will be set on position "B".



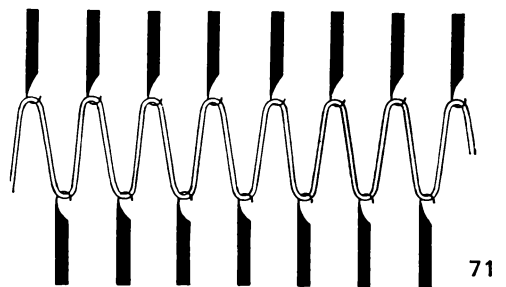
(4) First row knitting

- Put the hook into the yarn feeder between the knitter and the ribber from underneath, hook the yarn and pull it down.
- Move the connected carriage from left to right. (The yarn will hang on plain and purl needles.)



(5) Hang on the cast-on comb

- Pull out the wire from the cast-on comb. (Select large or small cast-on comb depending on the knitting width). Hang on the cast-on comb with the face having the protrusions facing you and the comb on top.
- Put in the cast-on comb between the knitter and the ribber from underneath and insert the comb between the plain and purl needles in such a way that the top of the comb does not disturb or drop the yarn hanging between the needles. Pass the wire through the top of the combs with your right hand while holding the comb with your left hand.
- Turn the loose end of the yarn around the cast-on comb knob to keep it out of the way and to tense the first stitch.



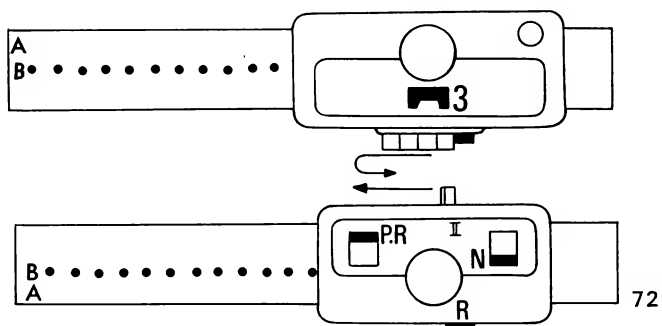
(6) Hang on weights.

Hang weights as per standard weight chart (page 12) on the cast-on comb to keep balance.

(7) Perfect selvedge

Set the carriages shown in the figure.

- Move the connected carriage from right to left. (Only the plain needles knit the stitch.)
- Move the connected carriage from left to right. (The purl needles knit the stitch.)
- Move the connected carriage from right to left. (Only the plain needles knit the stitch.)

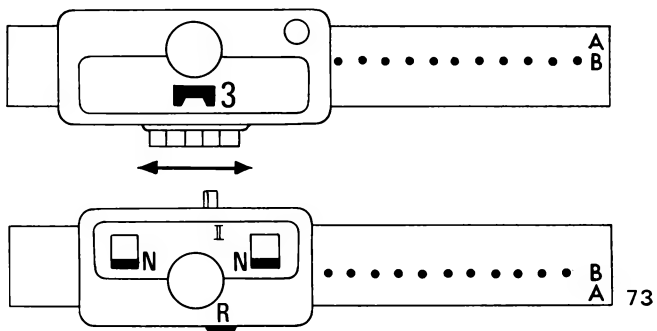


72

II Full needle Rib knitting

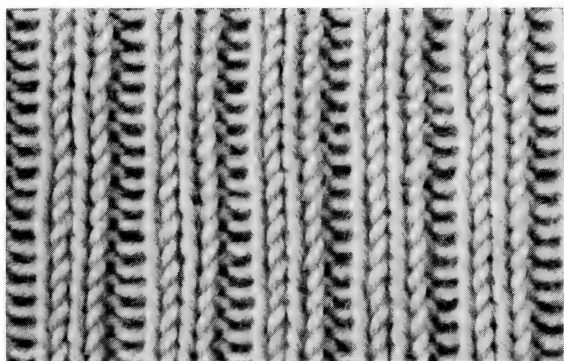
- * Set the connected carriage as shown in the figure, and move it back and forth.

Then, you can make easily Full needle Rib.



73

HOW TO KNIT 2 x 1 RIB



74

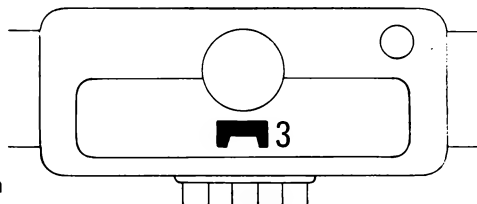
2 x 1 rib is called 2 knit 1 purl rib. In one row, there are 2 knit stitches alternating with 1 purl stitch and, vertically, form knit stitch over knit stitch and purl stitch over purl stitch.

I Casting on for 2 x 1 rib

(1) Setting of carriage

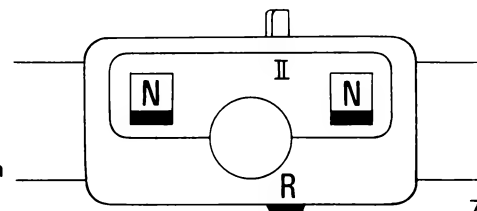
Carriage (K)

Pattern selector button: Plain Knitting
Holding cam lever: 3
Tension dial: On suggested tension



Carriage (R)

Cam lever: (L) N, (R) N
Tucking lever: R
Tension dial: On suggested tension

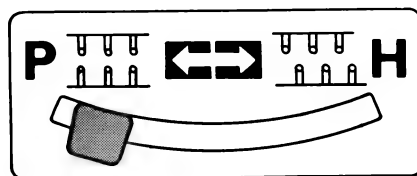


75

(2) Needle arrangement

- Set the half pitch lever on "P".
- Manually, arrange the plain needles and purl needles in position "B" as shown in right figure.

Note: Both end needles must be plain needles.



76



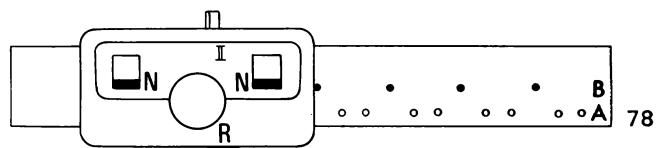
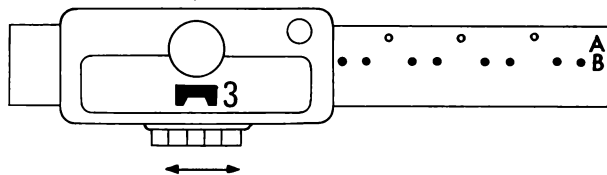
77

(3) Setting of needles in normal position

- a. By operating the connected carriage a few times across the needles of both beds, the needles on K and R needle beds are set in normal position.

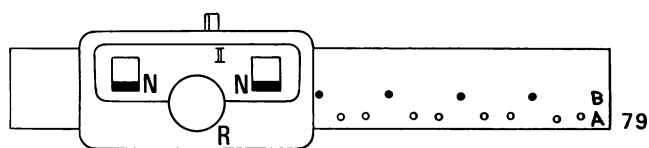
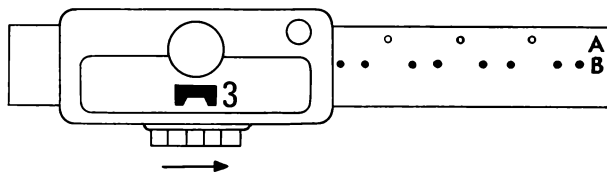
- b. Leave the connected carriage at left side of the needle beds.

- c. The plain needles and purl needles will be set on position "B".



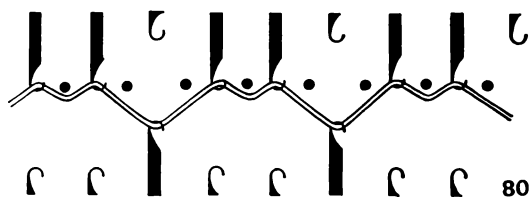
(4) First row knitting

- a. Put the hook into the yarn feeder between the knitter and the ribber from underneath, hook the yarn and pull it down.



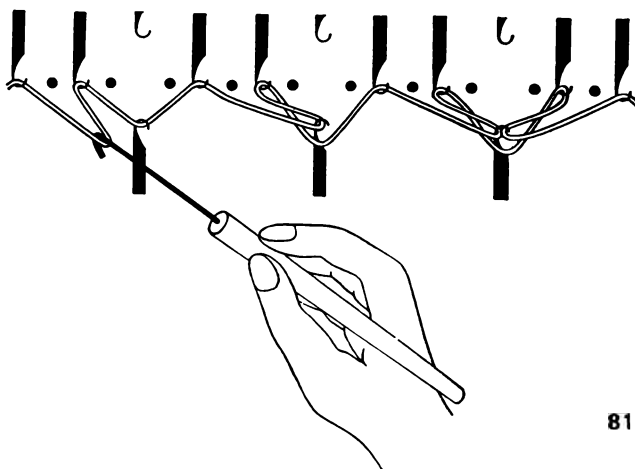
- b. Move the connected carriage from left to right (The yarn will hang on plain and purl needles.)

- c. By using the hook, hang the loops between 2 plain needles on the purl needles, as shown in right figure.



(5) Hang on the cast-on comb

- a. Pull out the wire from the cast-on comb. (Select large or small cast-on comb depending on the knitting width) Hang on the cast-on comb with the face having the protrusions facing you and the comb on top.



- b. Put in the cast-on comb between the knitter and the ribber from underneath and insert the comb between the plain and purl needles in such a way that the top of the comb does not disturb or drop the yarn hanging between the needles.

Pass the wire through the top of the combs with your right hand while holding the comb with your left hand.

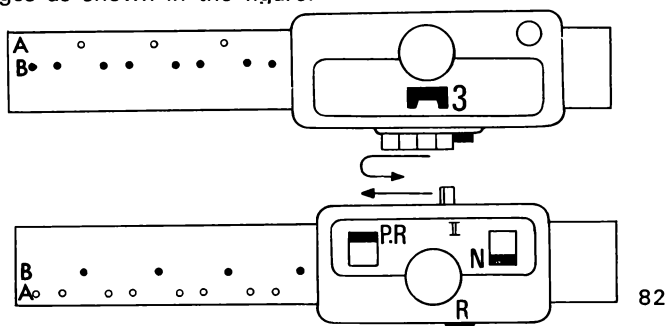
- c. Turn the loose end of the yarn around the cast-on comb knob to keep it out of the way and to tense the first stitch.

(6) Hang on weights

Hang weights as per standard weight chart (page 12) on the cast-on comb to keep balance.

(7) Perfect selvedge

Set the carriages as shown in the figure.



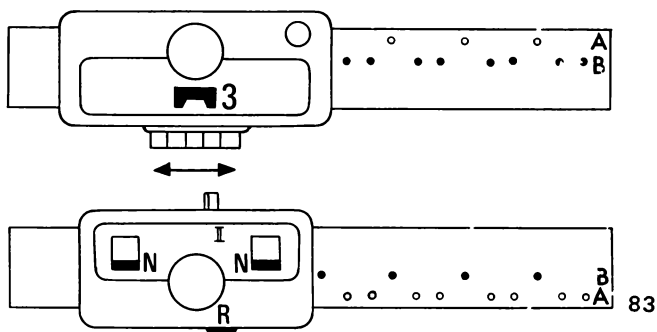
- a. Move the connected carriage from right to left. (Only the plain needles knit the stitch.)
- b. Move the connected carriage from left to right. (The purl needles knit the stitch.)
- c. Move the connected carriage from right to left. (Only the plain needles knit the stitch.)

II 2 x 1 Rib knitting

- * Set the connected carriage as shown in the figure and move it back and forth.

Then, you can make easily 2 x 1

Rib knitting.



HOW TO KNIT CIRCULAR KNITTING



84

Circular knitting is made up of only plain knit stitches, and is a jointless tube. Size of tube depends on the number of needles.

I Casting on for circular knitting

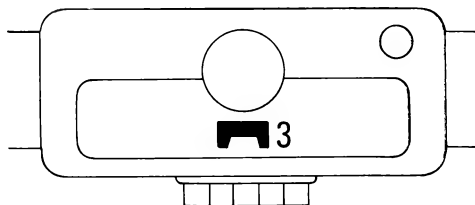
(1) Setting of carriage

Carriage (K)

Pattern selector button: Plain Knitting

Holding cam lever: 3

Tension dial: On suggested tension

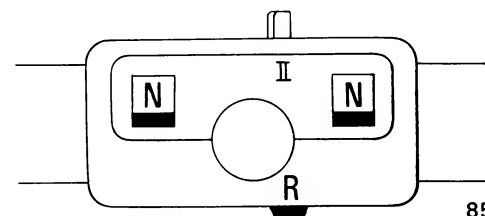


Carriage (R)

Cam lever: (L) N, (R) N

Tucking lever: R

Tension dial: On suggested tension

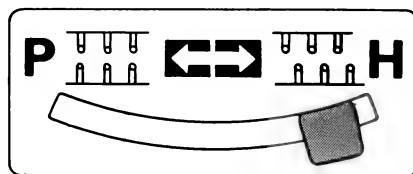


85

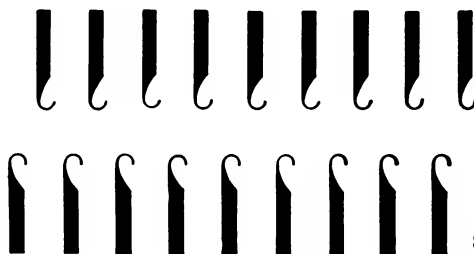
(2) Needle arrangement

- Set the half pitch lever on "H".
- By using back of 1/1 needle pusher, arrange the plain needles and purl needles in position "B" as shown in right figure.

Note: Number of needles on both beds must be same.



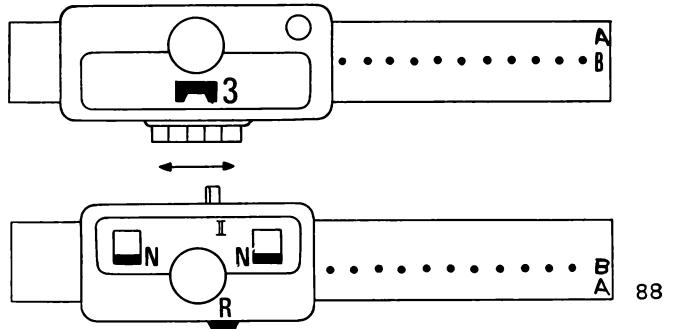
86



87

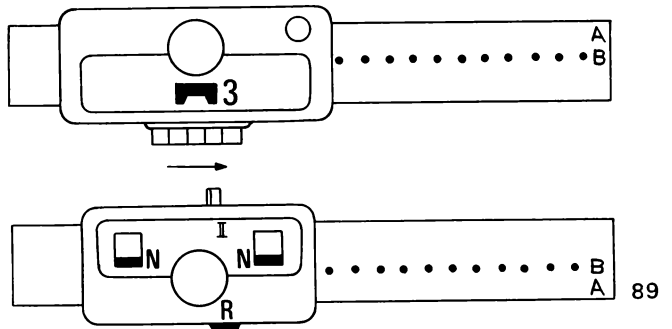
(3) Setting of needles in normal position

- By operating the connected carriage a few times across the needles of the both beds, the needles on K and R needle beds are set in normal position.
- Leave the connected carriage at left side of the needle beds.
- The plain needles and purl needles will be set on position "B".



(4) First row knitting

- Put the hook into the yarn feeder between the knitter and the ribber from underneath, hook the Cast-on thread and pull it down.
- Move the connected carriage from left to right. (The yarn will hang on plain and purl needles.)



(5) Hang on the cast-on comb

- Pull out the wire from the cast-on comb. (Select large or small cast-on comb depending on the knitting width)
Hang on the cast-on comb with the face having the protrusions facing you and the comb on top.
- Put in the cast-on comb between the knitter and the ribber from underneath and insert the comb between the plain and purl needles in such a way that the top of the comb does not disturb or drop the Cast-on thread hanging between the needles.
Pass the wire through the top of the combs with your right hand, while holding the comb with your left hand.
- Turn the loose end of the Cast-on thread around the cast-on comb knob to keep it out of the way and to tense the first stitch.

(6) Hang on weights

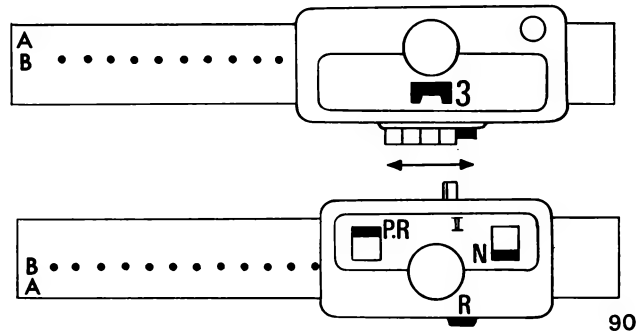
Hang weights as per standard weight chart (page 12) on the cast-on comb to keep balance.

(7) Change the thread of yarn feeder into the original yarn.

II Circular knitting

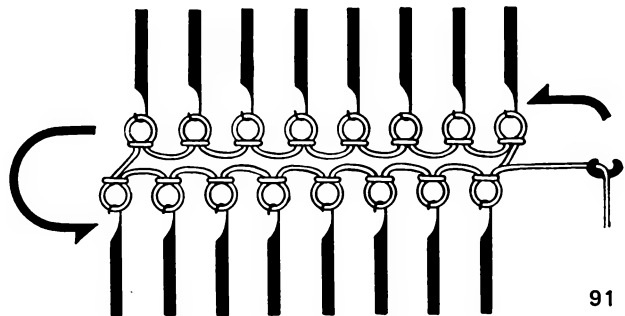
- * Set the connected carriage as shown in the figure, and move it back and forth.

Then, you can make easily Circular Knitting.



III Finish

- * After taking the Cast-on comb off, pull out the Cast-on thread. So, you can get the Circular knitting.



HOW TO KNIT "U" STYLE KNITTING



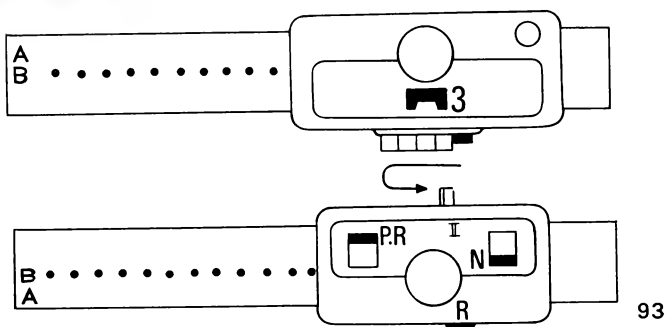
This garment is made of all plain knitting stitches. The knitter side and the ribber side are connected at only one side. This knitting is used for work of more than 200 stitches width. In the following, the garment is knitted with closed left side and open right side.

I Casting on for "U" style knitting

This is the same as for circular knitting.

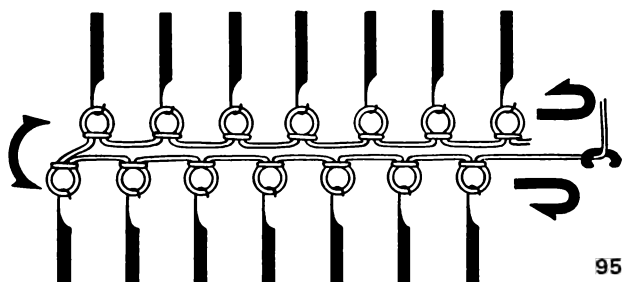
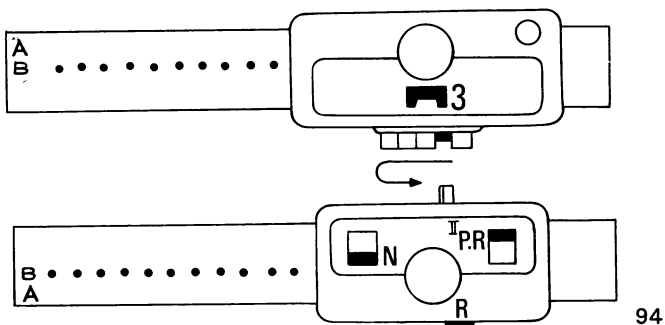
II "U" style knitting

- (1) Set the connected carriage as shown in the Fig. 93, and knit 2 rows.

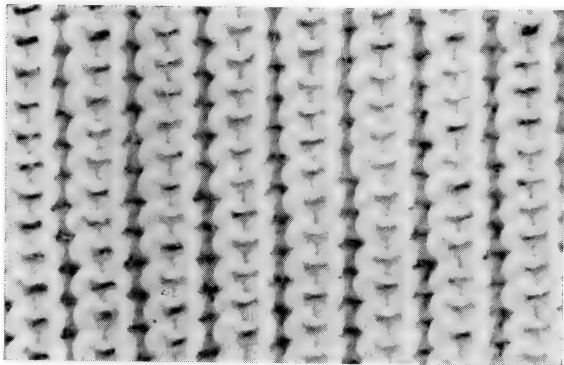


- (2) Reset the connected carriage as shown in the Fig. 94, and knit 2 rows.

- (3) Repeat steps (1) to (2), then you can make easily "U" Style Knitting.



HOW TO KNIT ENGLISH RIB



English rib is a variety of 1 x 1 Rib and knitter side is plain stitch but ribber side is tuck stitch.

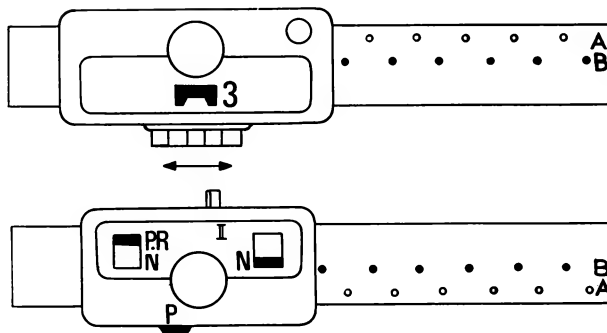
96

I Casting on for English rib

This is the same as for 1 x 1 rib.

II English rib knitting

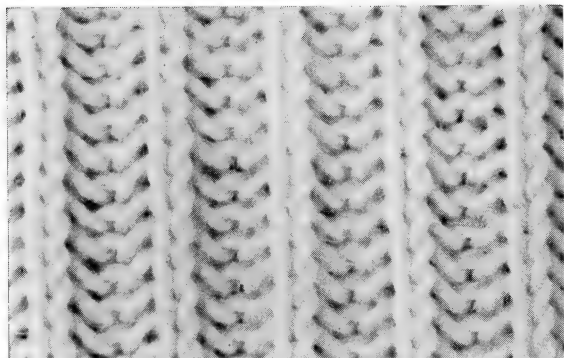
Set the connected carriage as shown in the figure, and move it back and forth. Then, you can make easily English Rib.



97

HOW TO KNIT FISHERMAN'S RIB

Fisherman's rib is made of tucking stitches on both sides of garment.



98

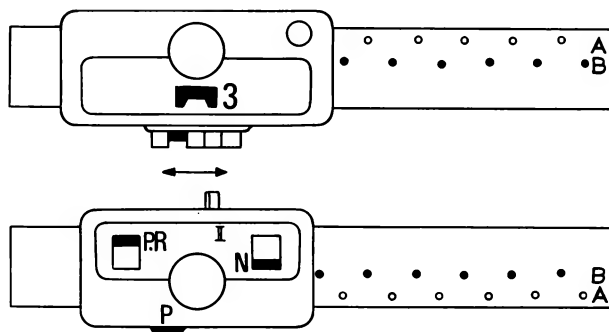
I Casting on for fisherman's rib

This is the same as for 1 x 1 rib.

II Fisherman's rib knitting

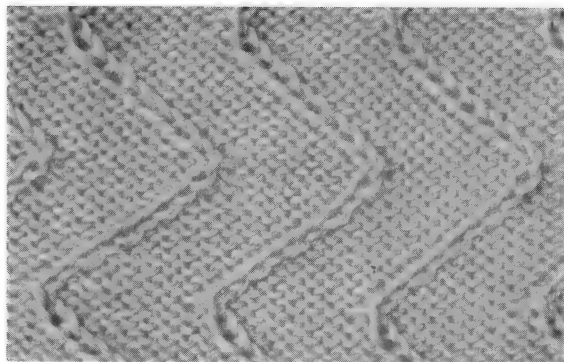
- * Set the connected carriage as shown in the figure, and move it back and forth. Then, you can make easily Fisherman's Rib.

Note: Raise up the left end Needle of KH to "E" position when the carriage goes to right. If the left TUCK button is depressed, raise up the right end needle of KH to "E" position.



99

HOW TO KNIT RACKING PATTERN



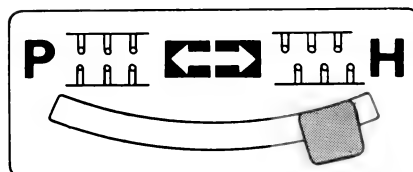
100

I Casting on for racking pattern knitting

(1) Setting of carriage

Carriage (K)

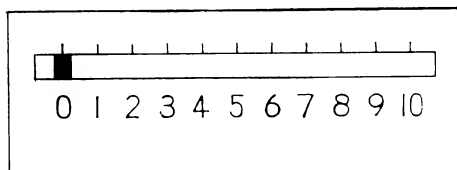
Pattern selector button: Plain Knitting
 Holding cam lever: 3
 Tension dial: On suggested tension



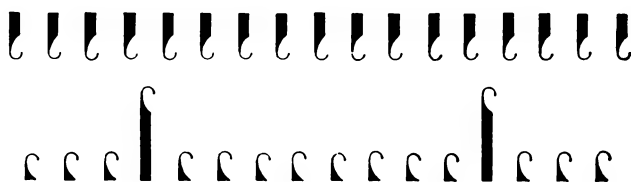
101

Carriage (R)

Cam lever: (L) N, (R) N
 Tucking lever: R
 Tension dial: On suggested tension



102



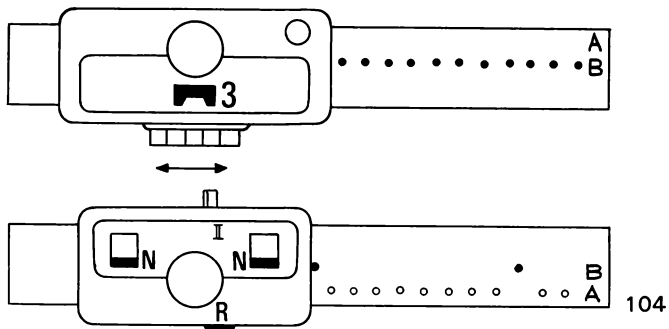
103

(2) Needle arrangement

- Set the half pitch lever on "H".
- Set the racking indicator on "O".
- Raise all plain needles of knitting width to position "B".
- Raise every eighth purl needle as shown in above figure to position "B". By changing the needle arrangement in the purl side, you can get many variation of racking patterns.

(3) Setting of needles in normal position

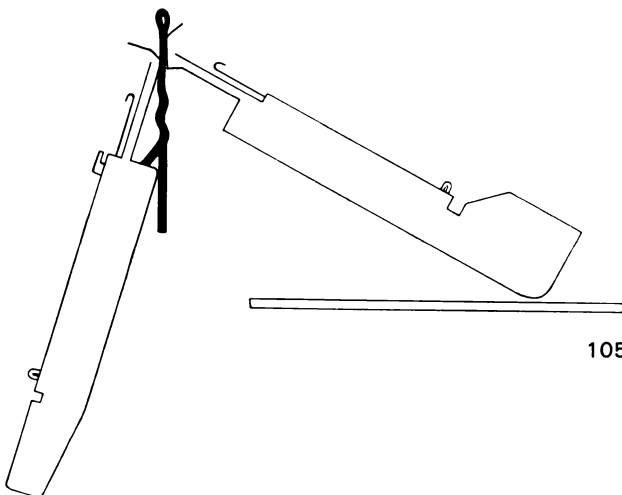
- By operating the connected carriage a few times across the needles of both beds, the needles on K and R needle beds are set in normal position.
- Leave the connected carriage at left side of the needle beds.
- The plain needles and purl needles will be set on position "B".
- Make sure that all latches of the needle are open.



(4) Thread in the yarn feeder

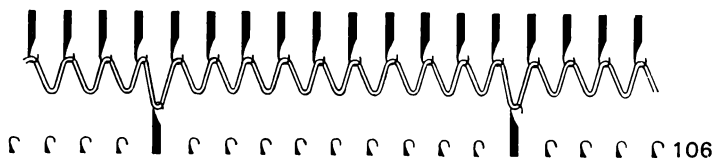
(5) Hang on the cast-on comb

- Hold the cast-on comb (with wire) with the face having the protrusions facing you and the comb on top.
- Put in the cast-on comb between the knitter and the ribber from underneath and hang on the back of the ribber in such a way that the comb and the gate of the knitter are directly opposite to each other.



(6) First row knitting

- Move the connected carriage from left to right (The yarn will hang on plain and purl needles.)

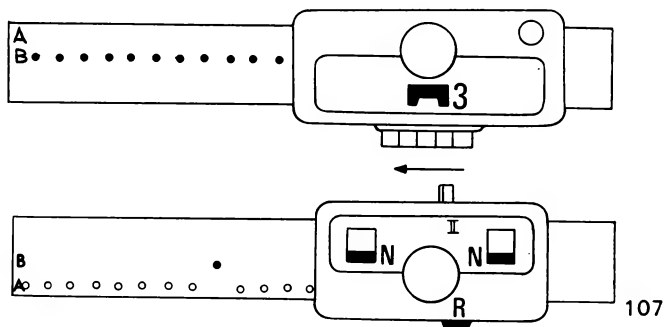


- Unhang the cast-on comb from the back of the ribber.
- Cast-on comb will come down and hang on the loops between the plain and purl needles.

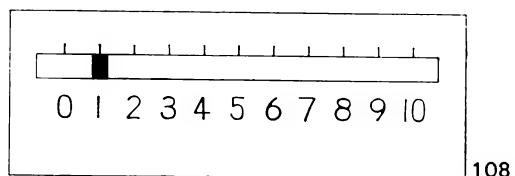
(7) Hang the weights. See chart on page (12)

II Knitting of racking pattern

- a. Move the connected carriage from right to left. (The plain and purl needles knit the stitch.)

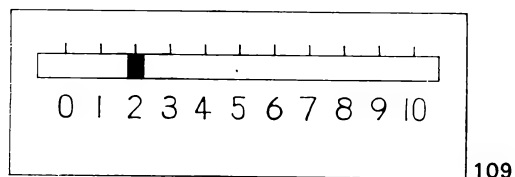


- b. Set the racking indicator on No. 1.



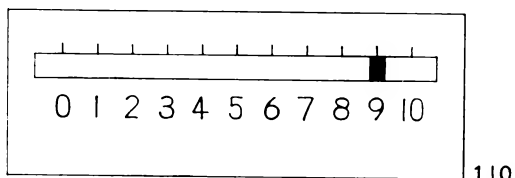
- c. Move the connected carriage from left to right, and set the racking indicator on No. 2.

- d. Repeat step (a) to step (c) until racking indicator indicates No. 10.



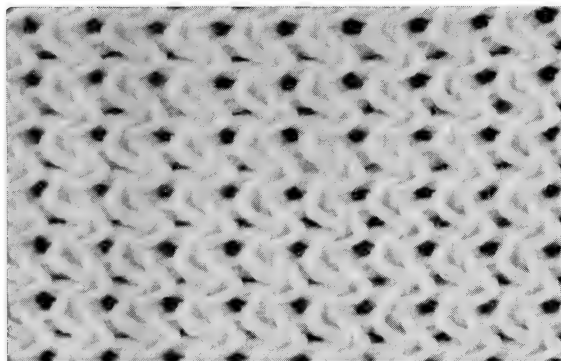
- e. Move the connected carriage from right to left, and set the racking indicator on No. 9.
(return to No. 9)

- f. Repeat step (e) until the racking indicator indicates No. 0.



- g. The pattern knitted from step (a) to step (f) is one cycle.

HOW TO KNIT RACKING PATTERN OF ENGLISH RIB



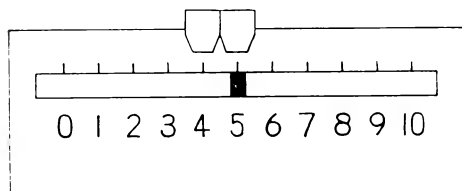
111

I Casting on for racking pattern of English Rib.

(1) Needle arrangement

- Set the racking lever on No. 5.
- Set the cursors on the racking indicator to No. 4, and No. 5.
- Set the half pitch lever on "P".
- By using 1 x 1 needle pusher, arrange the plain needles and purl needles in position "B" alternately.

Note: Both end needles must be plain needles.



112

(2) Setting of needles in normal position

This is the same as for 1 x 1 rib.

(3) First row knitting

This is same as for 1 x 1 rib.

(4) Hang the cast-on comb

This is the same as for 1 x 1 rib.

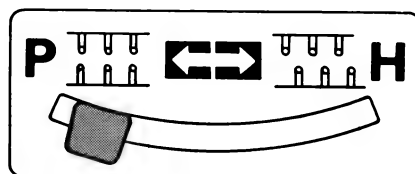
(5) Hang on weights

This is the same as for 1 x 1 rib.

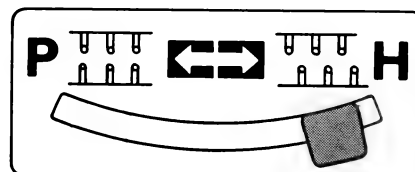
(6) Perfect selvedge

This is the same as for 1 x 1 rib.

(7) Set the half pitch lever to position "H"



113



114

II Knitting of racking pattern of English rib.

(1) Setting of carriage is same as for English rib.

(2) Knitting

a. Move the connected carriage from left to right (Only plain needles knit the stitch and the two threads hook on the purl needles.)

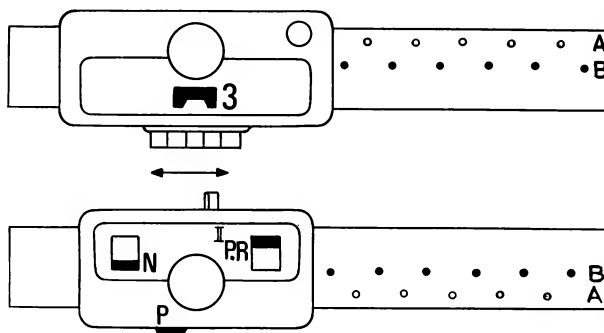
b. Set the racking indicator on No. 4.

c. Knit 2 rows.

d. Set the racking indicator on No. 5.

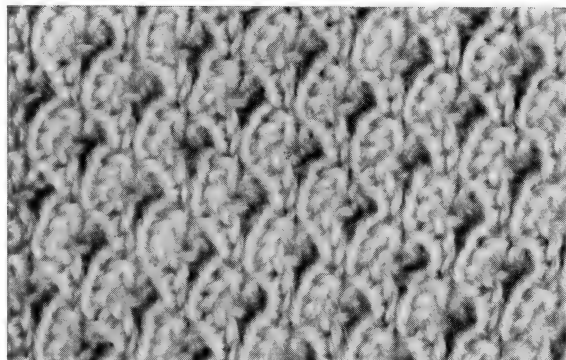
e. Move the connected carriage from right to left.

f. Repeat from step (a) to step (e).



115

HOW TO KNIT TUCKING PATTERN OF RIB



116

Tucking pattern of rib is a variation of 1 x 1 rib or full needle rib.

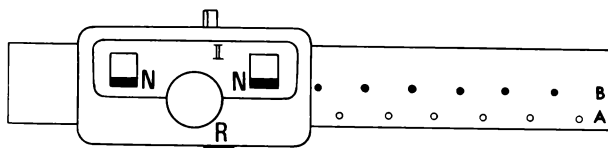
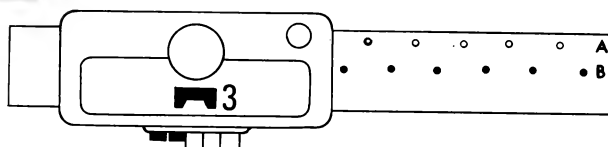
In the following description, tucking pattern of 1 x 1 rib is made.

- I Casting on for tucking pattern of 1 x 1 rib.

This is the same as for 1 x 1 rib.

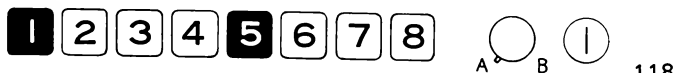
- II Knitting of tucking pattern of 1 x 1 rib.

- (1) Set the carriages as shown in the figure.
- (2) Knitting



117

- a. Press down the needle selector buttons (1) and (2), and set The Set-lever. (Reverse lever in position "A" and Slide meter on position 1)



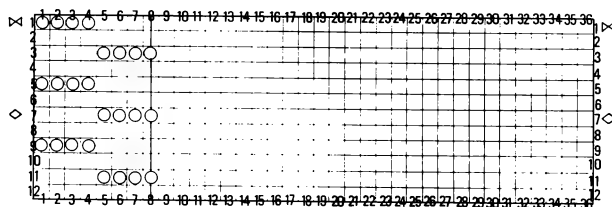
118

If the end needles are not selected, bring forward to "E" position by hand.

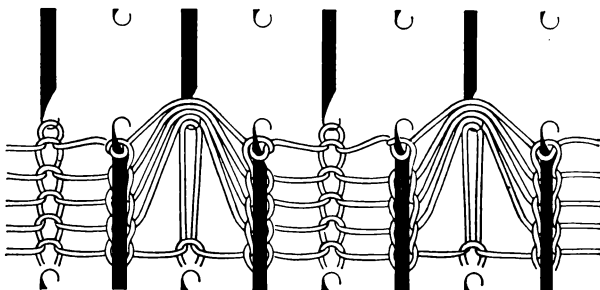
* INSTRUCTION FOR KH-800:

Make a Punch card as shown in Fig.119 and put it on the Pattern center. Swivel the Set-lever every row and move the carriage to knit.*

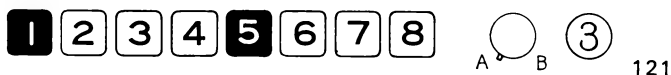
- b. Move the connected carriage from left to right.
- c. Select the same needles as in step (a).
- d. Move the connected carriage from right to left.
- e. Repeat from step (a) to step (d), 2 times.



119

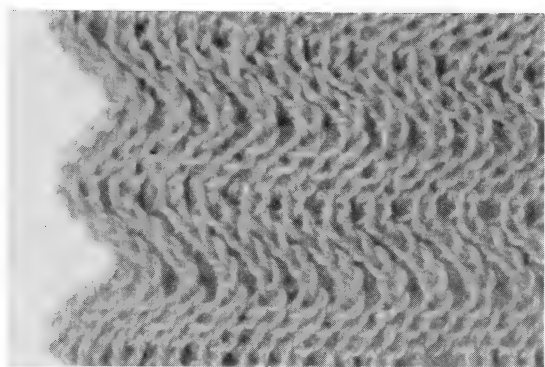


- f. Set the Slide meter on position 3,
and set The Set-lever.



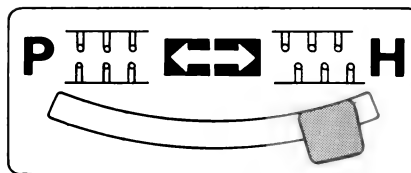
- g. Move the connected carriage from left to right.
h. Select the same needles as in step (f).
i. Move the connected carriage from right to left.
j. Repeat from step (f) to step (i), 2 times.
k. The pattern knitted from step (a) to step (j) is one cycle.

HOW TO KNIT ZIGZAG PATTERN



122

Zigzag pattern is racking pattern of fisherman's rib. In following description, two ply wool is used to make the racking pattern of all needles using fisherman's rib.

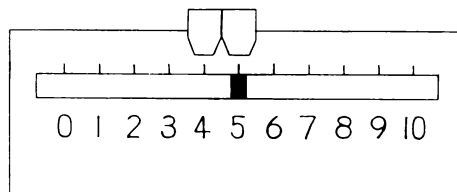


123

I Casting on for Zigzag pattern

This is the same as for full needle rib. Set the half pitch lever to position "H".

Set the racking indicator on No.5. Place the cursors on the racking indicator on No.4 and No.5.



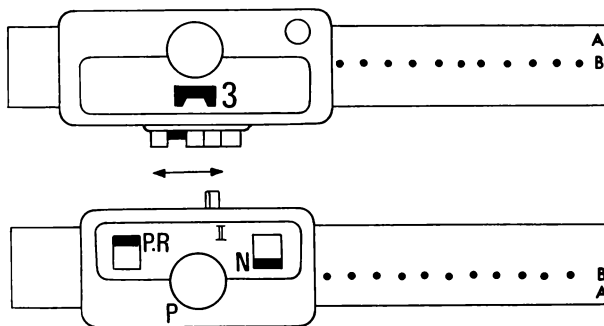
124

II Knitting of zigzag pattern

- (1) Set the carriages as shown in the figure

- (2) Knitting

- a. Raise the left end needle of the work to position "E".
b. Move the connected carriage from left to right. (The plain needles have two loops in their hook and the purl needles knit the stitch.)
c. Set the racking indicator on No.4.



125

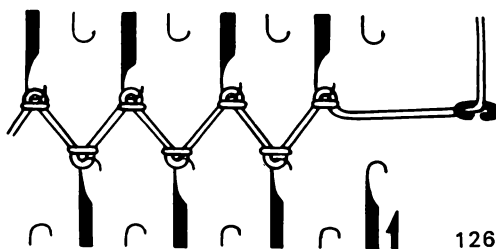
- d. Move the connected carriage from right to left.
- e. Set the racking indicator on No.5.
- f. Repeat from step (a) to step (e), 9 times.
- g. Raise the left end needle of the work to position "E".
- h. Move the connected carriage from left to right.
- i. Set the racking indicator on No.4.
- j. Move the connected carriage from right to left.
- k. In this step, do not swing the racking lever. From next row, zigzag direction changes.
- l. Raise the left end needle of the work to position "E".
- m. Move the connected carriage from left to right.
- n. Set the racking indicator on No.5.
- o. Move the connected carriage from right to left.
- p. Set the racking indicator on No.4.
- q. Repeat from step (g) to step (p), 9 times.
- r. Raise the left end needle of the work to position "E".
- s. Move the connected carriage from left to right.
- t. Set the racking indicator on No.5.
- u. Move the connected carriage from right to left.
- v. In this row, do not swing the racking lever.
- w. Repeat from step (a) to step (v).

INCREASING THE STITCHES

I Increasing one stitch on one side of knitting width

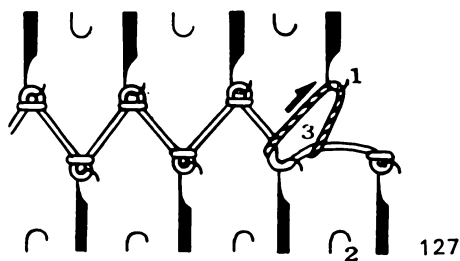
(1) Simple method

- a. Place the carriage on the side which you want to increase.
- b. Raise into action one end needle from the resting position (A) on the side nearest the carriage.
- c. The empty needle will pick up the yarn as it knits the next row.



(2) Full fashioned method

- a. Use 1 needle transfer tool, move the 1st stitch (1) out to the adjacent empty needle (2).
Now 2nd needle from the end becomes empty.
- b. Onto the empty needle pick up either neighbouring lower loop (3).



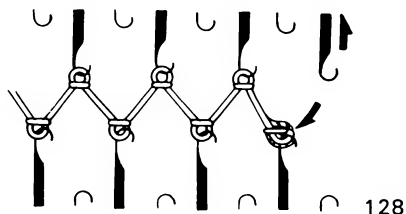
II Increasing more than two stitches on either side of the garment

- (1) Place the carriage opposite to the side you want to increase.
- (2) Bring into action on the side opposite to the carriage as many needles as the number of stitches to be increased.
- (3) Move the carriage.
- (4) The yarn will hang on increased needles on both sides.
- (5) Hang weight hanger for side tension and small weight on the yarn which is shaping zigzag line.
- (6) Continue the knitting.

DECREASING THE STITCHES

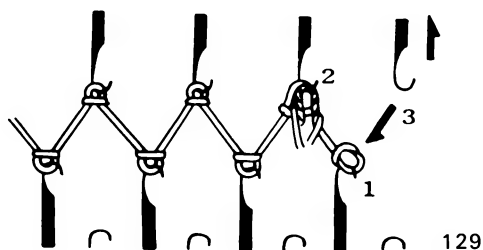
I Decreasing one stitch on either end

- (1) Simple method is to use the single transfer tool. Transfer the end stitch to the 2nd needle, and take the empty needle out of action.



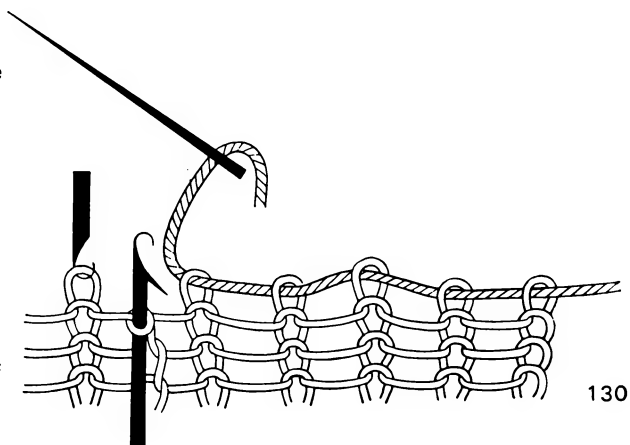
(2) 2nd method

- a. Use two-needle transfer tool. Transfer the end stitch to the 2nd needle and the 2nd needle to the 3rd needle.
- b. Take the empty needle out of action.



II Decreasing more than 2 stitches

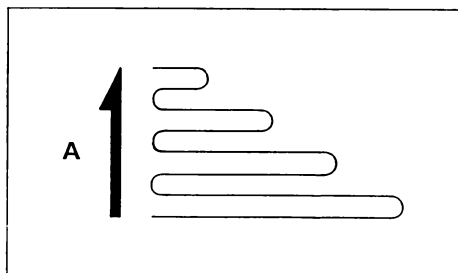
- a. Place the carriage opposite to the side you want to decrease.
- b. Use the tapestry needle. Transfer the stitches which you want to decrease to the stem of the tapestry needle and pass through loops of stitches to be decreased.
- c. Take the empty needles out of action.



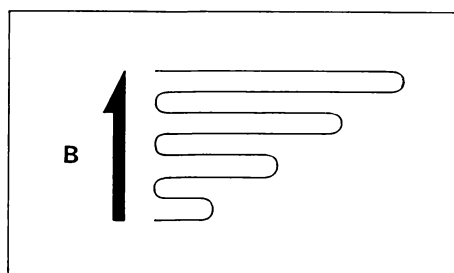
PARTIAL KNITTING OF RIBBING

Partial knitting is used for shaping of garment, making darts, shaping of a heel, vertical and horizontal buttonholes, neck opening, pockets etc. There are two cases, one is decreasing of knitting part, another one is increasing of knitting part.

This general explanation begins from one row before partial knitting of ribbing, from left to right.

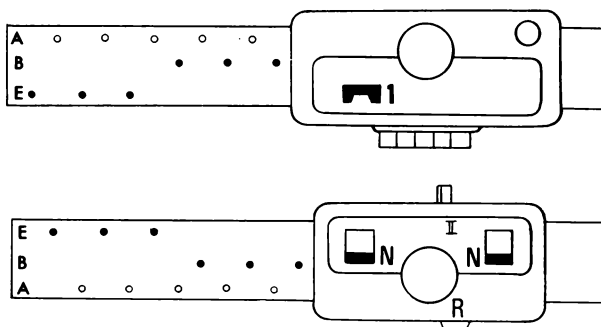


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- a. Set the carriage as shown in the figure.
- b. Raise the nonknitting needles of K and R beds to position "E".
- c. Move the connected carriage from right to left.



133

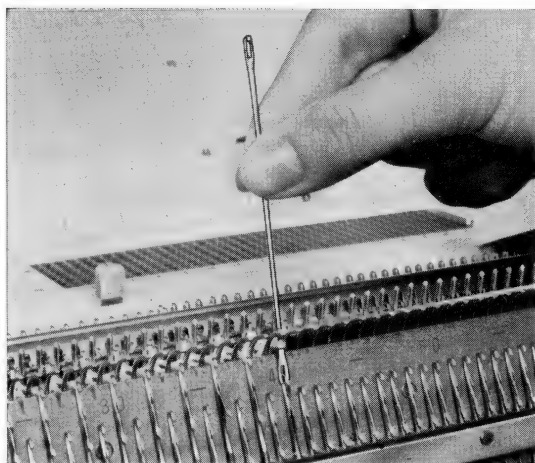
- d. To avoid a hole in the knitting before knitting on the return course, hook the yarn laying across the K and R needle beds into the hook of the raised needle nearest the knitting.
- e. Move the connected carriage from left to right.
- f. Repeat from step (b) to step (e) for the length of the buttonhole or the pattern.

Note: If partial knitting is being used for diagonal color knitting in step (b) and (e), the number of needles raised should be increased or decreased according to the pattern and the direction in which the stripe will run.

1. HOW TO CONVERT FROM RIB TO PLAIN KNITTING OR FROM PLAIN KNITTING TO RIB

How to convert from 1 x 1 rib to plain knitting.

- a. Raise the knitting needles from resting position "A" to position "B" and open the latches.
- b. By using the transfer tool or double eyelet transfer needle, transfer the stitches on the purl needles to the empty knitting needles.



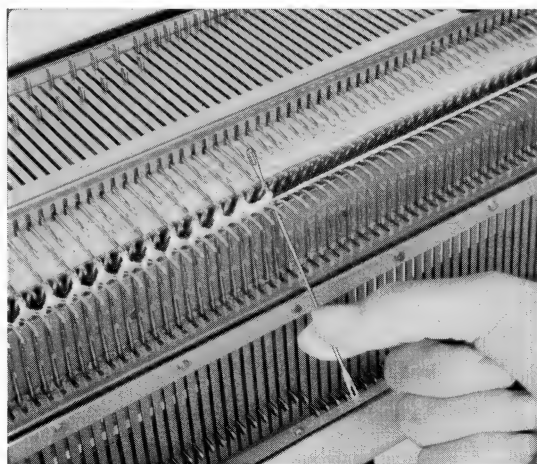
134



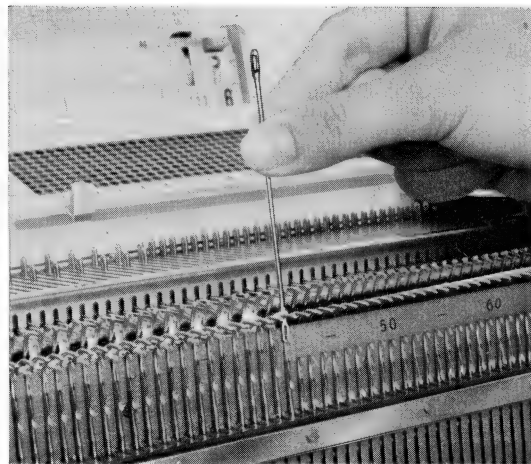
135

How to convert from plain knitting to rib.

- a. By using the transfer tool, transfer the stitches on every other knitting needle to the corresponding purl needle.



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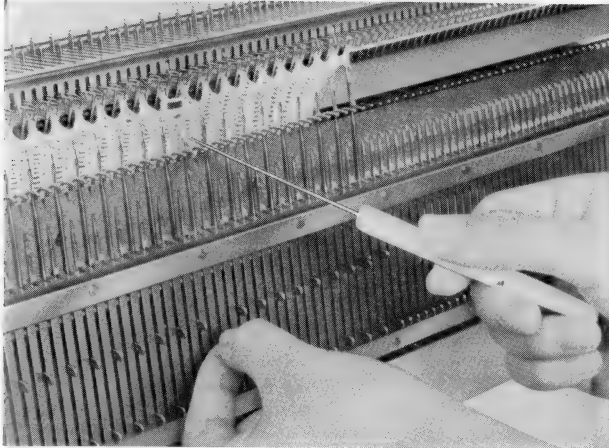
137

2. HOW TO PICK UP DROPPED STITCH

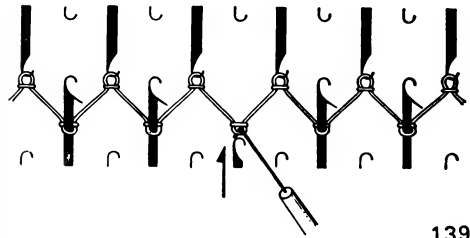
First, take off the weights and prevent dropping of multiple rows.

A. In case one stitch is dropped.

- a. With the single transfer tool, pick up the stitch and the unknitted yarn and put them both on the empty needle.



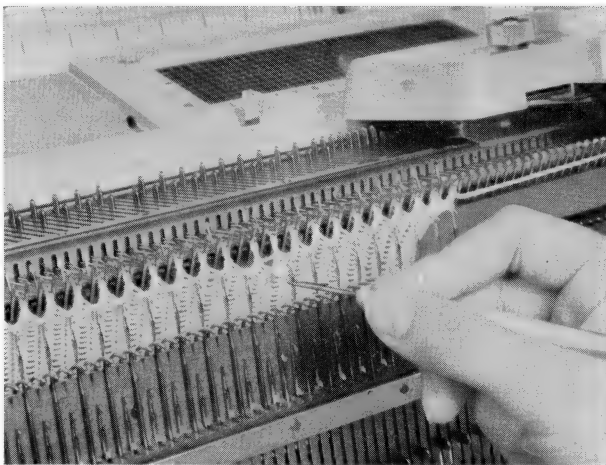
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B. In case multiple rows are dropped.

- a. Open the gate by pushing down both bracket levers and catch the lowest loop of the dropped stitches with latch tool.
- b. With the latch tool, make the stitches and hang the final stitch on the empty needle.

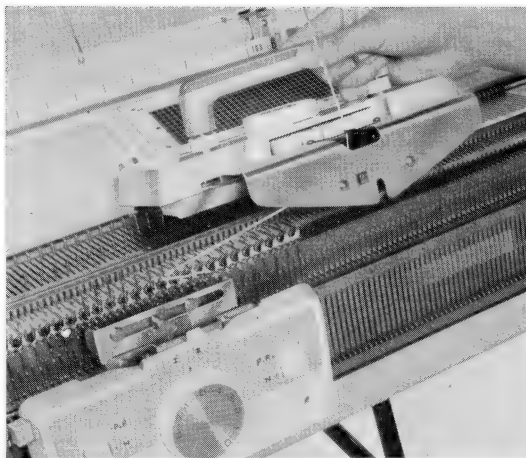


140

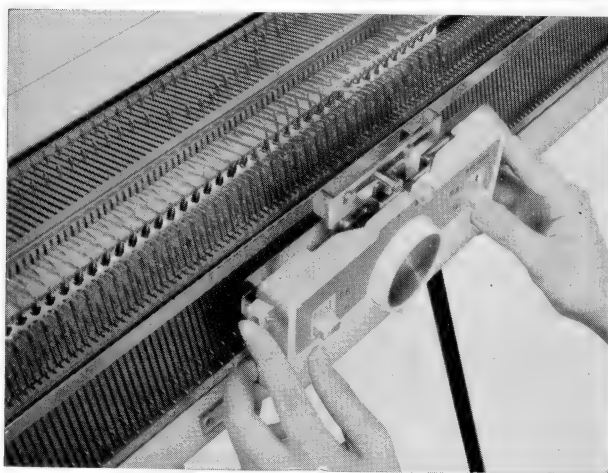
3. TO UNLOCK THE CARRIAGE

When the carriage is jammed:

- a. By pressing the connecting hook release button, remove the carriage (R) from the carriage (K).
- b. Lift the front of the carriage (K) and move to the side where the row commenced.
- c. Depress release button on R carriage and move to same side as K carriage.



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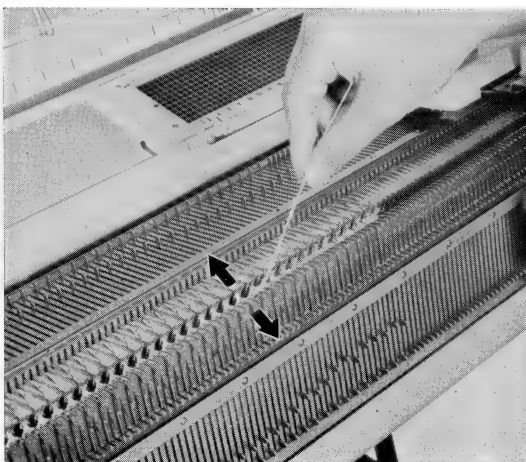
142

4. UNDOING ROWS OR UNRAVELLING

If you have knitted more rows than necessary, do not remove work from the knitter. Simply unravel one or several rows by doing the following.

Pull the yarn slightly, drawing it out of the stitches.

The stitches of the previous row will slip into the hook of the needles automatically as the yarn is raised in an upward movement towards the needle bed.



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5. HOW TO REMOVE THE KNITTING FROM KNITTER

A. Unbound method

- a. Take out the yarn from the yarn feeder.
- b. Take off the weights hanging on the cast-on comb.
- c. Move the connected carriage across the needles of the both needle beds.
- d. Then, the work will be released.

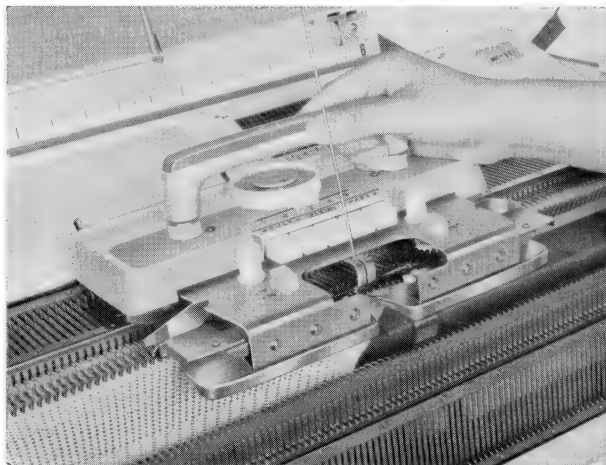
B. To transfer to hand knitting needle.

At first, convert from rib to plain knitting as described in Item "How to convert from 1 x 1 rib to plain knitting".

Then transfer the stitches to hand knitting needle.

6. HOW TO USE THE KNITTER AS A SINGLE BED WITH THE RIBBER ATTACHED

- a. Push down both bracket levers of the ribber and the ribber will come down one step. Push down both levers again and the ribber will come down one more step.
- b. Take off the connecting arm assembly from the carriage (K) and convert it to the sinker plate assembly.
- c. The knitter can be used as a single bed.



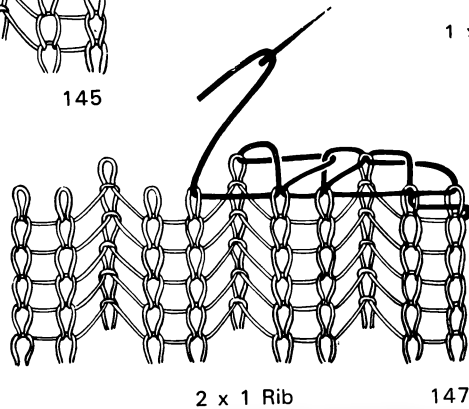
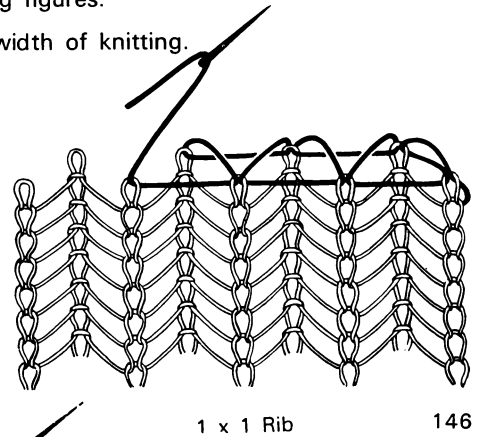
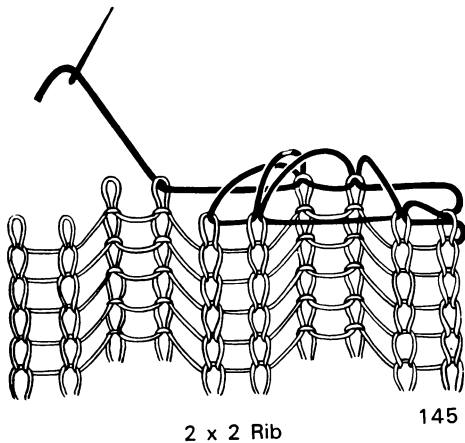
144

7. BINDING UP AND FINISHING EDGE OF RIBBING

This method is used for binding up the stitches of the last row by using the yarn of rib knitting. Binding up is the same as selvedge.

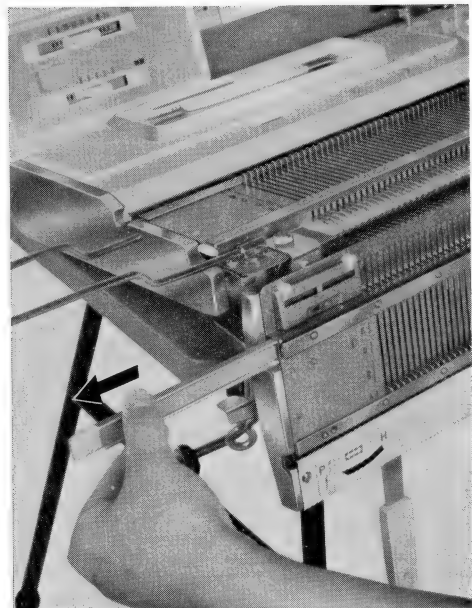
When you finish ribbing, knit one or three rows of circular knitting. Then bind the last row by using the tapestry needle as shown in the following figures.

The length of the yarn for binding off is 3 times the width of knitting.

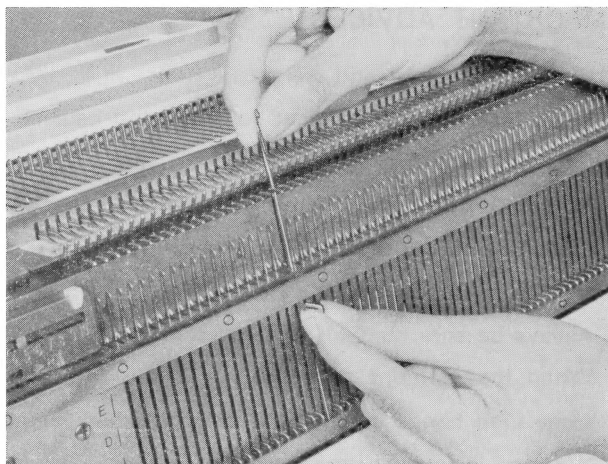


HOW TO REPLACE THE PURL NEEDLE

- Push the needle plastic bar from either side.
- Slide out by hand from the ribber until the needle you wish to change is freed.
- Bring forward the needle as far as it will go.



- d. Push down the hook of the needles until the shank of the needle rises free of the needle bed.
- e. Grasp the shank and draw it out backwards.
- f. Replace new needle with latch opened.
- g. Push in the bar, making sure that the flat face is down.

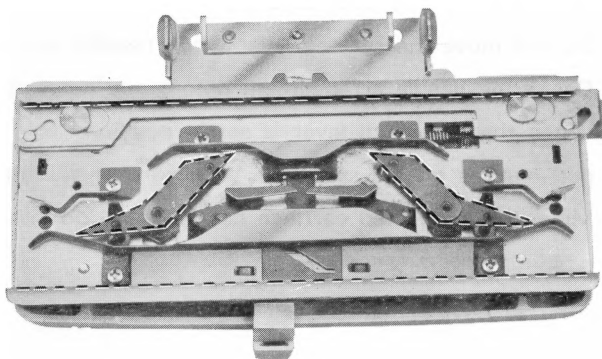


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MAINTENANCE

Each time you finish work, service your machine as follows:

- a. Clean the machine of all wool lint with hand brush.
- b. Polish each part with soft oil cloth.



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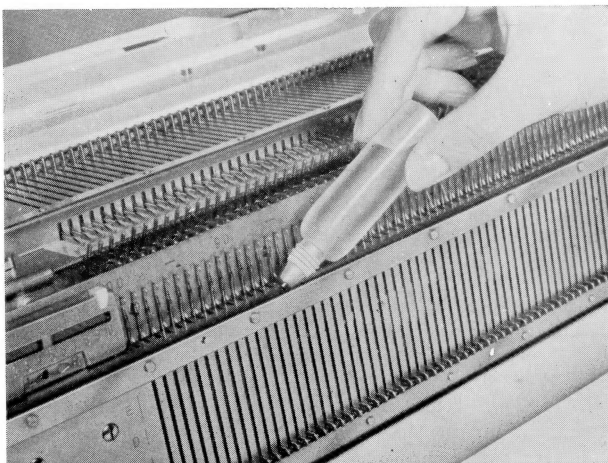
c. Oiling.

Oil the following parts.

1. Back side of the carriage
2. Rails of the needle bed
3. Needle butts

Wipe off stained oil.

- d. Keep your machine in a dry place.



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IMPORTANT ADVICE

- * Casting on combs and weights.

Hang these on the garment so that good balance is obtained.

- * Dropped stitch.

To pick up dropped stitches, first, take off the weights and slide down the ribber one step, then pick up the dropped stitch with hook.

- * Knitting with different number of knitting and purl needles.

Always be sure number of needles of the knitter side is more than the purl side.

- * When the garment does not come down as you knit row by row, check to see whether some loop hangs on the gate of needle bed, or not.

If a loop is found hanging on the gate, take it off with hook.

Otherwise, increase the number of weights.

- * Move the racking lever carefully

Do not move the racking lever when needles are raised over the needle bed gates.

- * Check the needle arrangement before you move the carriage.

When the half pitch lever is set in position "P", do not knit with knitting needles and the purl needles on the same line because they will crash together and damage.

- * Move the connected carriage carefully and do not move it quickly.

421-600

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